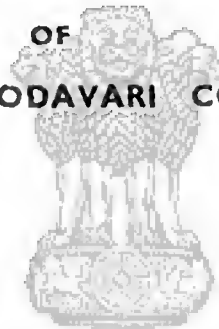


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# **MINISTRY OF IRRIGATION AND POWER**

## **REPORT OF THE KRISHNA—GODAVARI COMMISSION**



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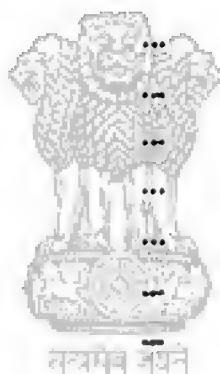
### **Annexure V**

### **Monthly Flow Data of the Godavari River System**

**July 1962**

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## FOREWORD

The data presented herein have been abstracted from Annexure VI, Ten-daily Discharge Data of the Godavari River System, and are subject to the remarks set out in the foreword of that Annexure.

As in Annexure VI, the year has been taken as the water year applicable to the hydrologic conditions on the Krishna and the Godavari rivers, from 1st June of one year to 31st May of the following year.

The flow at any site as shown herein includes the withdrawals, if any, at that site and releases from upstream storage, if any. This flow excludes upstream withdrawals and extractions for storage, if any.

The commission found a wide variation in the methods of observation or calculation of discharges adopted at various sites, from time to time. Since the reliability of river discharge data is closely related to the method of observation or calculation of river discharges, the Commission made special efforts to ascertain these methods. The information that could be obtained in this respect has been set out in this Annexure at each site.

An index map showing all the discharge sites is at the end of this Annexure.

**LIST OF SITES ON RIVER GODAVARI  
FOR WHICH DISCHARGE DATA HAVE**

*Note :* Sites at which observations have been discontinued

*Classification :*

D<sub>1</sub>—Sites at which velocity observa-

D<sub>2</sub>—Sites at which velocity observa-

S —Sites at which velocity is estima-

C —Sites at which discharges are

A —Sites at which discharges are

T —Sites at which discharges are

spillway overflow and withdraw-

Serial No.	Name of site	Name of State	Name of	
			sub-tributary	tributary or main river
1	2	3	4	5
1.	Gangapur	Maharashtra	—	Godavari
2.	Nandur Madhmesh- war	„	—	„
3.	Puntumba	„	—	„
4.	Toka	„	—	„
5.	Mungi	„	—	„
6.	Soan Bridge	Andhra Pradesh	—	„
7.	Mahcherial	„	—	„
8.	Dummagudem	„	—	„
9.	Dowlaishwaram	„	—	„

# AND ITS TRIBUTARIES

## BEEN MADE AVAILABLE.

are shown in italics.

tions are made by currentmeter

tions are made by floats.

ted from observation of water-surface slope

calculated from gauge-discharge curves

calculated by weir formulae

based on capacity table of reservoir,

al through sluices

Classifi- cation	Period for which data available		Remarks	Serial No.
	Period	No. of years for calculating ave- rage		
6	7	8	9	10
D <sub>2</sub> /T	1906 to 1925-26 Nov. 1945 to May 1961	20 14	Annual yield only	1
D <sub>2</sub> /A	1906 to 1925-26	20	Annual yield only	2
A	June 1941 to May 1961	20		
D <sub>2</sub>	Apr. 1951 to Dec. 1960	9		3
D <sub>2</sub>	June 1954 to Dec. 1960	6		4
D <sub>2</sub>	June 1954 to Dec. 1960	6		5
S	June 1946 to May 1961	15		6
D <sub>1</sub>	Aug. 1955 to Dec. 1959	—	Irregular observations.	7
C/A	April 1953 to Jan. 1954 and June 1957 to May 1961	—	-do-	8
A	June 1901 to May 1961	60	June 1901 to Dec. 1919 monthly figures only. Earlier data from 1895 to 1900 not included.	9

Serial No.	Name of site	Name of State	Name of	
			Sub-tributary	tributary or main river
1	2	3	4	5
10.	Darna (Lake Beale)	Maharashtra	—	Darna
11.	<i>Chehadi</i>	"	—	"
12.	Padli (Mukne)	"	Aundh Nalla	"
13.	<i>Pimpalgaon Dukra</i>	"	Karwa	"
14.	<i>Nasik Road</i>	"	Waldevi	"
15.	Lakhamapur	"		Kadwa
16.	Palkhed (weir)	"	—	"
17.	Ozarkhed	"	Unanda	"
18.	Waghad	"	Kolwan	"
19.	<i>Khadakozar</i>	"	Odal	"
20.	Bhandardhara	"	—	Pravara
21.	Ozer	"	—	"
22.	<i>Newasa</i>	"	—	"
23.	Chikalthan	"	Mula	"
24.	Khadakwagulgaon	"	Shiv	"
25.	Sidheshwar	"	—	Purna
26.	Purna Bridge	"	—	"

Classifi- cation	Period for which date available		Remarks	Serial No.
	Period	No. of years for calculating ave- rage		
6	7	8	9	10
D <sub>2</sub> /T	1906 to 1925-26	19	Annual yield only	10
T	June 1941 to May 1961	20		
D <sub>2</sub>	June 1949 to Dec. 1960	8		11
D <sub>2</sub>	1906 to 1925-26	20	Annual yield only	12
	June 1948 to May 1961	10		
D <sub>2</sub>	1909 to 1914, 1920, 1922 and 1923	9	June to Dec. only	13
	June 1947 to May 1959	10		
D <sub>2</sub>	Jan. 1956 to Dec. 1960	—	Irregular observations	14
D <sub>2</sub>	1906 to 1925-26.	20	Annual yield only	15
	June 1948 to May 1961	12		
A	1906 to 1925-26	20	Annual yield only	16
	June 1941 to May 1961	20		
D <sub>2</sub>	1906 to 1925-26	20	Annual yield only	17
	June 1948 to May 1961	12		
T	June 1941 to May 1961	20		18
D <sub>2</sub>	June 1906 to May 1916	10		19
	1917 to 1925-26	9	Annual yield only	
T	Jan. 1947 to May 1961	14		20
D <sub>2</sub>	1906 to 1925-26	20	Annual yield only	21
A	June 1941 to May 1961	20		
D <sub>2</sub>	June 1954 to Dec. 1960	6		22
D <sub>2</sub>	1906 to 1925-26	20	Annual yield only	23
	Aug. 1945 to May 1961	13		
D <sub>2</sub>	Nov. 1958 to May 1961	2		24
D <sub>2</sub>	Jan. 1958 to May 1961	3		25
D <sub>2</sub>	Feb. 1958 to May 1961	3		26

Serial No.	Name of Site	Name of State	Name of	
			Sub-tributary	tributary or main river
1	2	3	4	5
27.	Ghanpur Anicut	Andhra Pradesh	—	Manjra
28.	Nizamsagar	"	—	"
29.	Pocharam	"	Alair	"
30.	Manair	"	—	Maner
31.	Sanigram	"	Siddipetvagu	"
32.	Ramappa Lake	"	Moruvanchavagu	"
33.	Ghanpur Cheroo	"	"	"
34.	Jafferabad	"	—	Pranhita
35.	Majri	Maharashtra	Wardha	"
36.	Ballarshah	"	"	"
37.	Lakhanwara	Madhya Pradesh	Wainganga	"
38.	Dhuti	"	"	"
39.	Warsa	Maharashtra	"	"
40.	Shingodi	Madhya Pradesh	Pench (Wain-ganga)	"
41.	Totledoh	"	"	"
42.	Pathagudem	Andhra Pradesh	—	Indravati
43.	Pulusura (Uppe Kolab H.E. Scheme)	Orissa	—	Sabari
44.	Jalaput (Machkund H.E. Scheme)	"	Sileru	"

Classifi- cation	Period for which date available		Remarks	Serial No.
	Period	No. of years for calculating ave- rage		
6	7	8	9	10
A	June 1951 to May 1961	10		27
T	Sept. 1934 to May 1961	26		28
T	June 1948 to May 1961	13		29
T	June 1951 to May 1961	10		30
T	June 1953 to May 1961	8		31
T	Jan. 1956 to May 1961	5		32
T	Jan. 1956 to May 1961	5		33
D <sub>1</sub>	Oct. 1957 to Nov. 1959	—		34
D <sub>1</sub>	Aug. 1955 to May 1961	5		35
D <sub>1</sub>	Aug. 1955 to May 1961	5		36
D <sub>2</sub>	1959 and 1960	2	June to Oct. only	37
A	June 1941 to May 1961	—	Irregular observations	38
D <sub>2</sub>	June 1957 to May 1961	4		39
D <sub>2</sub>	1959 and 1960	2	June to October only	40
	June 1960 to Jan. 1961	—		41
D <sub>1</sub>	Oct. 1957 to Dec. 1959	—		42
A	June 1921 to May 1929	8	Fortnightly figures only	43
A/T	June 1942 to May 1955 and Oct. 1959 to May 1961	13		44

## NOTATION

Unless otherwise stated, the following notation has been adopted herein :-

$Q$  = Discharge in cusecs

$L$  = Length, in feet, of weir or vent over which flow takes place

$H$  = Depth of flow, in feet, on the crest of a weir

$N$  = Number of end contractions

$S$  = Surface slope of water flowing in a channel

$N(k)$  = Kutter's rugosity coefficient

$N(m)$  = Manning's rugosity coefficient

$R, L$  = Reduced level, or elevation in feet above mean sea-level

$h_a$  = Head, in feet, due to velocity of approach

$V_a$  = Velocity of approach, in feet per second

$g$  = Acceleration due to gravity, in feet per second per second

$h$  = Head in feet

$d$  = Difference (in feet) between the water level downstream of a weir and the crest of the weir

$C$  = Coefficient

$G$  = Gauge reading (in feet)

$D$  = Depth of water in a channel नत्रमव नयन

## METHODS ADOPTED FOR OBSERVING DISCHARGES AT VARIOUS SITES ON THE GODAVARI AND ITS TRIBUTARIES

*Note :—Sites at which observations have been discontinued are shown in italics.*

### (1) Godavari at Gangapur (Maharashtra) :

(i) Up to 1955, the area-velocity method was generally employed at this site.

The cross-section of the site was observed at intervals of three or four years when cross-sectional areas for different gauge heights were worked out. The site is reported to be stable.

The velocity observations during normal monsoon flow were made by using surface floats, generally wooden floats, released and picked up by trained swimmers. No boat was used. These observations were made at five points, one in the middle, one near each bank, and one between each bank and the middle. The gauge-run was usually 600 feet to 800 feet long and the mean surface velocity was obtained by dividing the length of the run by  $\frac{1}{4}(t_1 + t_5 + t_2 + t_3 + t_4)$  in which  $t_1, t_2, t_3, t_4$  and  $t_5$  were the times, in seconds, taken by each successive float, starting from one bank of the river, to travel from the upper to the lower end of the gauge-run. The wooden floats were thrown such that they fell approximately in the required compartments.

The mean velocity was calculated by multiplying the mean surface velocity with a coefficient depending on the hydraulic mean depth in accordance with Higham's Table IV reproduced below :—

<i>Hydraulic mean depth (feet)</i>	<i>Value of coefficient</i>	<i>Hydraulic mean depth (feet)</i>	<i>Value of coefficient</i>
0.5	0.59	5.0	0.76
1.0	0.65	6.0	0.77
2.0	0.71	9.0	0.78
3.0	0.73	12.0	0.79
4.0	0.75		

The gauge and velocity observations were usually taken twice a day at 6 A.M. and 6 P.M. but during monsoon, when there were frequent fluctuations in the discharge,

the observations were made more frequently. Gauge readings were taken both at the beginning and end of the velocity observations.

From the observations made in accordance with the method described above, standard discharge tables were prepared to serve as a check on the day to day work and for use when the velocity measurements were not made for any reason.

During the period from December to May, when the water-level was below zero level of the gauge, the flow was diverted into a small well-defined channel of uniform width for a length of about 50 feet and the velocity observations were taken by noting the time taken by a float to pass from one end to the other of the 50 feet channel; the float was released by a man wading through the channel. This surface velocity was reduced to mean velocity by multiplying with the constant from the above Table. The cross-sectional area was determined by sounding.

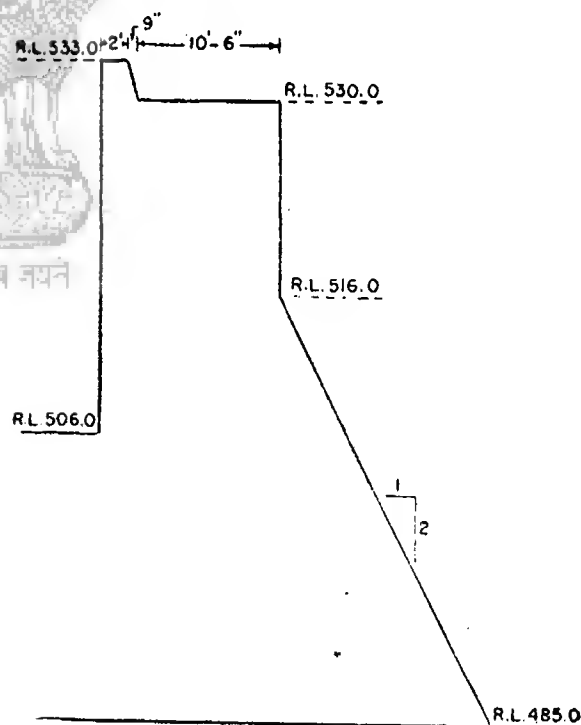
(ii) Since 1955, the discharges at this site are computed from the capacity table of the reservoir, surplus over the waste weir and the withdrawals through the sluices.

(2) **Godavari at Nandur Madhmeshwar**  
(Maharashtra):

The discharges at this site are based on gaugings recorded at the Nandur Madhmeshwar weir, aligned along a segment of a curve. The sum-total of the withdrawals through the sluices and the discharges over the weir gives the total supply at this site. The flow over the weir, which is free over-fall, is calculated by the formula  $Q = 3.57 LH^{3/2}$  for all stages of flow. The section of the weir is shown in Figure 1.

There are two gauges, one on each bank. The water level is read from the gauge on the right flank.

Experiments carried out by Maharashtra in geometrically similar sectional models, on 1/20, 1/30 and 1/40 scales,



SECTION ACROSS NANDUR-MADMESHWAR WEIR

Figure 1

indicate that the value of the coefficient  $C$  in the formula  $Q=CLH^{3/2}$  decreases from about 3.6 at  $H=3$  feet to about 3.15 at  $H=7.5$  feet and then increases to about 3.4 at  $H=12$  feet.

**(3) Godavari at Puntumba (Maharashtra) :**

Generally the same as for (1) (i) above except that the floats were thrown by hand from the banks and not released by swimmers. The river bed is reported to be stable at this site.

**(4) Godavari at Toka (Maharashtra) :**

Generally the same as for (1) (i) above except that a boat was used to drop the floats. The river bed is reported to be stable at this site.

**(5) Godavari at Mungi (Maharashtra) :**

Same as for (3) above. The river bed is reported to be sandy and erodible at this site.

**(6) Godavari at Soan Bridge (Andhra Pradesh) :**

The slope-area method was adopted in working out the discharge of the river at this site. For all stages of the river, the value of slope  $S$  was taken as 1 in 1,295 and of  $N(k)$  as 0.03. A cross-section of the river was taken ten or eleven years back; gauge readings are available from 1946. The reference gauges are on the piers on the left flank of the bridge.

From some recent observations made in the river, above and below the Soan Bridge, it has been found that :

(a) the surface slope in low discharges is 1 in 3,774 at a point 1,100 feet upstream of the bridge ; and

(b) the surface slope at Kuchampalli site below the bridge varies from 1 in 2,000 to 1 in 1,250.

An automatic gauge is fixed in a gauge well at the central pier of the bridge ; but this is reported to be out of order. The bed of the river is stated to be rocky at this site.

**(7) Godavari at Mancherial (Andhra Pradesh) :**

From August 1955 to March 1958, velocity observations were taken by a current meter suspended from the top of the railway bridge and gauge readings were observed on a pier of the bridge. The velocities observed were surface velocities. A factor of 0.84 was used to convert surface velocities to mean velocities. Cross-section under each span of the bridge was observed twice a year, before and after monsoons.

From March 1958 to December 1959, except during high floods, current meter observations were taken at the gauge site at 0.6 D, about 2,000 feet downstream of the bridge, using a boat. Cross-sections at this site were taken before and after the monsoon. The river at this site is reported to be wide and the bed sandy.

**(8) Godavari at Dummagudem (Andhra Pradesh) :**

A calibrated gauge discharge table for the anicut at Dummagudem is used for calculating the discharges at this site ; no particulars are available of the method adopted for preparing the table. The anicut has a top width of 12 feet (6 feet of which is 6 inches lower than the rest). The upstream face of the anicut is vertical. Generally, free-fall conditions of flow occur at the anicut ; only during high flood the weir gets submerged.

**(9) Godavari at Dowlaishwaram (Andhra Pradesh) :**

(i) Gauges upstream and downstream of the anicuts and in the off-taking canals are regularly observed and recorded both in the morning and in the evening. From these observations the supplies withdrawn by the canals, the flow over the four anicuts (see Plate I) and the discharges through the undersluices are taken from discharge tables or calculated and the sum-total of these components gives the total flow of the river Godavari at Dowlaishwaram, the daily recorded discharge being the weighted average of the discharges corresponding to the morning gauge, to the evening gauge and to the morning gauge of the following day.

(ii) The important particulars of the four anicuts at the head of the Godavari Delta Canals are as follows :

<i>Name of anicut</i>	<i>Length of shuttered portion</i>	<i>Number of shutters each 10' x 3'</i>	<i>Length of raised crest on the sides</i>	<i>Name of off-taking canal</i>
(1)	(2)	(3)	(4)	(5)
	<i>(Feet)</i>		<i>(Feet)</i>	
Dowlaishwaram	4470.50	445	376.75	Eastern Delta Canal on left bank
Ralli	2722.00	271	137.0	Central Delta Canal on right bank
Maddur	1415.50	141	134.0	—
Vizeswaram	2469.42	246	132.0	Western Delta Canal on right bank

(iii) All the anicuts have a crest level\* of R. L. 38.75 and a crest width of about 17 feet ; the shape of the upstream curve of the anicut and of the downstream glacis, however, varies in different anicuts. The raised crests on the sides are designed to have top level of R.L. 41.75, the same as the top of the shutters, but actually there are slight variations from the designed level. A portion of the raised crest of the Dowlaishwaram Anicut is sloping and also curved.

(iv) A plan of the head works showing the position of the river gauges is at Plate I.

(v) For calculating discharges over the anicuts, under different conditions of flow, the following procedure is being followed from 1936 onwards : \*\*

- (a) When the depth of flow over the anicuts is less than 3.0 feet, there can be no flow over the raised crest portion of the anicuts and flow over the anicuts is possible only in the portion where the shutters have been dropped. Under these conditions, the discharge is read from a table based on the formula :

$$Q = L (D + H) V_a \quad \text{..... (1)}$$

in which

$L$  is the length of the portion of the anicut in which shutters have been dropped, viz., number of shutters dropped  $\times 10$  feet ;  
 $D = 7.0$  feet (assumed as the depth of river-bed below the crest level) ;  
 $V_a$  is the velocity of approach. This varies with  $H$  and is taken from a table ; some of the values are as follows :

$H$ (Feet)		$V_a$ (Feet per second)
0.5	...	0.15
1.0	...	0.38
1.5	..	0.70
2.0	...	1.01
2.5	...	1.32
3.0	...	1.66

The velocity of approach as given in the tables has been obtained by equating

---

\*The crest of all the four anicuts was originally at R. L. 38.00. This was raised by 9 inches and falling shutters 2 feet high were fitted in 1898. New falling shutters 3 feet high were fitted in 1936.

\*\*No record is available of the discharge tables adopted prior to 1936 nor of the basis of those tables. It is likely that, for the conditions set out in paragraph (v) (a) and (v) (b), the same method was being followed from 1913 onwards as after 1936. Prior to 1913 the discharges were calculated by the formula  $Q = 3.5 LH^{3/2}$  and the velocity of approach was ignored.

the discharge per foot run, as obtained by formula (1) above, with the discharge obtained by the following formula :

$$Q = 3.1 [(H + h_a)^{3/2} - h_a^{3/2}] \dots \dots \dots (2)$$

in which  $h_a$  is the head due to velocity of approach  $V_a$  .

Due allowance is also made for leakage between the standing shutters.

- (b) When the depth of water on the crest exceeds 3.0 feet and is less than 4.0 feet, the discharge over the anicut is taken from the formula :

$$Q = L (D + H) V_a + L_1 (D_1 + H_1) V_{a1}$$

in which

$D_1 = 10.0$  feet (assumed as the depth of river bed below the top of shutters or the raised crest),

$H_1$  is the depth of water above top of shutters or the raised crest ;

$L_1$  is the length of the portion of the anicut with shutters standing plus the effective length of the raised crest ; and

$V_a$  and  $V_{a1}$  are the velocities of approach in the anicut lengths designated as  $L$  and  $L_1$  respectively, and are obtained from tables (extract below) :

$H$	$V_a$ (for portion of anicut with fallen shutters)	$V_{a1}$ (for portion of anicut with shutters standing and with raised crest)
3.2	1.79	0.02
3.4	1.92	0.07
3.6	2.05	0.18
3.8	2.19	0.20
4.0	2.33	0.28

The values of  $V_a$  have been calculated in the same manner as described in (a) above.

The values of  $V_{a1}$  have been calculated by equating the discharge passing over the standing shutters or the raised flanks, calculated by formula (2), with the discharge per foot run calculated by formula (1) [taking  $D$  as 10.0 feet and  $H$  as the depth of water over the shutters or on the raised flanks].

- (c) When the depth of water over the crest exceeds four feet, it is assumed that all the automatic shutters will have fallen (these shutters begin to fall when  $H$  is about 3.7 feet) and the discharge passing over each anicut is

then calculated (until the downstream water level rises above the crest level of the anicuts) by the formula :

$$Q = L (D + H) V_a + L_1 (D_1 + H_1) V_{a1}$$

in which

$L_1$  is the effective length (for the particular value of  $H$ ) of the flanks with raised crest, and  $V_a$  and  $V_{a1}$  are taken from tables (extract below) :

$H$ (Feet)	$V_a$ (for shuttered portion of anicuts)	$V_{a1}$ (for flanks with raised crest)
	.....feet per second.....	
4.3	2.53	0.41
4.5	2.68	0.50
5.0	3.00	0.73
5.5	3.34	0.99
6.0	3.68	1.23
6.5		1.53
7.0		1.81
7.5		2.09

The values of  $V_a$  given above are as fixed by the Chief Engineer in 1938\* after some modification of the results obtained by calculations carried out in the manner set out in (b) above.

The values of  $V_{a1}$  given above were calculated in the same manner as set out in (b) above.

Discharge tables, prepared in accordance with the formula and values given above\* are followed until the downstream water level rises above the crest level of each anicut ; this is assumed to happen when  $H$  exceeds the values given below :

Name of Anicut	For the shuttered portion	For the raised flanks
Dowlaiswaram	4.3	5.6
Ralli	5.1	6.6
Maddur	5.9	7.3
Vizeswaram	6.2	7.5

(d) When the depth over the crest exceeds the values given in the above table (i.e., when the flow over the anicut is assumed as under "drowned" condi-

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\* No information is available of the method adopted prior to 1938.

tions) the discharge passing over the shuttered portion of the anicut is calculated by means of formula (1) taking  $D$  as 7.0 feet and taking the values of from tables (extract below) :

<i>Depth on crest</i>		<i>Velocities of approach <math>V_a</math> for "drowned" conditions. (feet per second)</i>			
<i>H</i>		<i>Dowlaiswaram</i>	<i>Ralli</i>	<i>Maddur</i>	<i>Vizianwaram</i>
5.0		2.88	3.08	—	—
6.0		2.92	3.56	3.88	—
7.0		2.99	3.80	3.98	4.15
8.0		3.08	3.90	4.16	4.28
9.0		3.20	3.98	4.47	4.58
10.0		3.36	4.12	5.03	4.99
11.0		3.55	4.32	5.78	5.46

The values for the velocities of approach, as given above, were fixed in 1936 by equating the discharge per foot run, as obtained by formula (1) above with the discharge obtained by the following formula :

$$Q = 3.1 [(h + h_a)^{3/2} - h_a^{3/2}] + 8Cd(h + h_a)^{1/2} \dots\dots\dots (3)$$

in which

$h$  is the difference of the water levels upstream and downstream of the anicut ;

$C$  is a coefficient ; and

$d$  is the depth in feet of the downstream water level above the crest.

In working out the values of  $V_a$  by the above-mentioned process,  $D$  was assumed as 7.0 feet and the value of  $d$  was fixed, separately for each anicut, for different values of  $H$ , by a study of river gauges, upstream and downstream, for the years 1922, 1927 and 1929 and drawing a mean curve between three widely\* different curves for those years.

The values of  $C$ , taken as varying with  $d$ , are as follows :

<i>d</i>		<i>C</i>
Less than 6.0 feet	...	0.60
6.0 feet	...	0.62
7.0 feet	...	0.66
8.0 feet	...	0.75
9.0 feet	...	0.80
10.0 feet	...	0.90
11.0 feet	...	0.93
12.0 feet and over	...	0.95

\* A comparison of the mean curve with corresponding curves for the years 1912, 1919 and 1953, however, shows a fairly close fit.

The discharges passing over the raised flanks are taken from curves based on formula (3), taking  $h$  and  $d$  as applicable to the conditions on the flanks,  $h_a = \frac{V_a^2}{2g}$  and taking the values of  $V_a$  from the above table, applicable to the shuttered portion of the respective anicut.

(vi) The withdrawals by the canals taking off at Dowlaishwaram are based on observed gauges in the canals. Various formulae were evolved based on the gaugings conducted from time to time. Gauge-Discharge tables based on canal gaugings were introduced for Dowlaishwaram and Bobberlanka canals in 1942 and 1941 respectively and are in use since then. Gauge-Discharge table for the Vizeswaram canal was prepared in 1933 based on the following formulae :

(i) For gauge readings up to 5.0 feet,

$$Q = 150 (G + 0.6)^{5/3}$$

(ii) For gauge readings 5.1 feet and above,

$$Q = 1,000 G - 2,500$$

This table is in use since 1933.

(vii) The discharges passed through the anicut under-sluides are being calculated from 1928-29 as follows :

(i) when the under-sluidie gates are clear of water :

$$Q = 5.6 L \sqrt{h} (H - 0.33 h)$$

(ii) when the under-sluidie is wholly submerged :

$$Q = 5.6 L d \sqrt{h}$$

(iii) when the under-sluidie opening is partially submerged :

$$Q = 3.1 L (H^{3/2} - H_1^{3/2}) + 5.6 L d \sqrt{h}$$

where  $Q$  = discharge through under-sluidies

$L$  = length of vent

$d$  = height of vent

$h$  = difference between upstream and downstream water levels

$H$  = upstream depth of water above sill

$H_1$  = depth of shutter bottom below upstream water level.

#### (10) Darna at Darna (Lake Beale) (Maharashtra):

From the daily water levels observed in the lake, the contents of the lake are determined by referring to the "content table." Discharges through various sluices

in the dam, surplus flow over the spillway, leakage, evaporation and absorption losses etc. for every day are recorded in a statement. From these, the discharges at this site are worked out.

(11) *Darna at Chhadi (Maharashtra) :*

Generally the same as for (1) (i) above, except that the floats were dropped from a bridge about 200 feet upstream of the site and not released by swimmers or from a boat. The river bed is reported to be stable at this site.

(12) *Aundh Nalla (Darna) at Padli (Mukne) (Maharashtra) :*

Same as for (1) (i) above. The river bed is reported to be unstable at this site.

(13) *Karwa (Darna) at Pimpalgaon Dukra (Maharashtra) :*

Same as for (1) (i) above. The river bed is reported to be unstable at this site.

(14) *Waldevi (Darna) at Nasik Road (Maharashtra) :*

Same as for (1) (i) above. The river bed is reported to be sandy and unstable at this site.

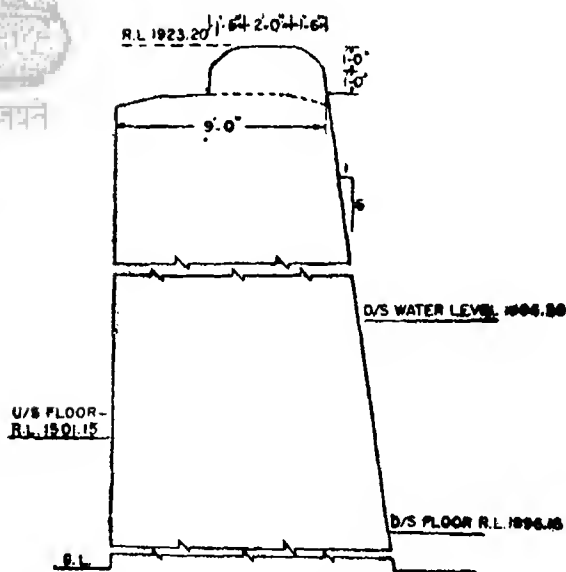
(15) *Kadwa at Lakhamapur (Maharashtra) :*

Same as for (1) (i) above. The river bed is reported to be stable at this site.

(16) *Kadwa at Palkhed (Weir) (Maharashtra) :*

The discharges at this site are based on the gauge observations made at the Palkhed weir aligned along a segment of a circle. The flow over the weir is calculated by the formula  $Q=3.08LH^{3/2}$  for all stages of flow over the weir. The sum of the withdrawals through the sluices and the discharges over the weir give the total discharge at this site. Free-fall conditions occur at the weir.

Model experiments have been conducted by Maharashtra with sectional models, on 1/15, 1/24 and 1/40 scales, to study the variation in the values of the coefficient in the formula  $Q=CLH^{3/2}$  for different values of  $H$ . The value of the coefficient  $C$  increases from about 3.5 for  $H=2.0$  feet to about 4.1 for  $H=8.0$  feet. The cross-section of the weir is shown in Figure 2.



SECTION ACROSS PALKHED WEIR

Figure 2.

(17) **Unanda (Kadwa) at Ozarkhed (Maharashtra)**

Same as for (1) (i) above. The river bed is reported to be unstable at this site.

(18) **Kolwan (Kadwa) at Waghad (Maharashtra) :**

Same as for (10) above.

(19) **Odal (Kadwa) at Khadakozar (Maharashtra) :**

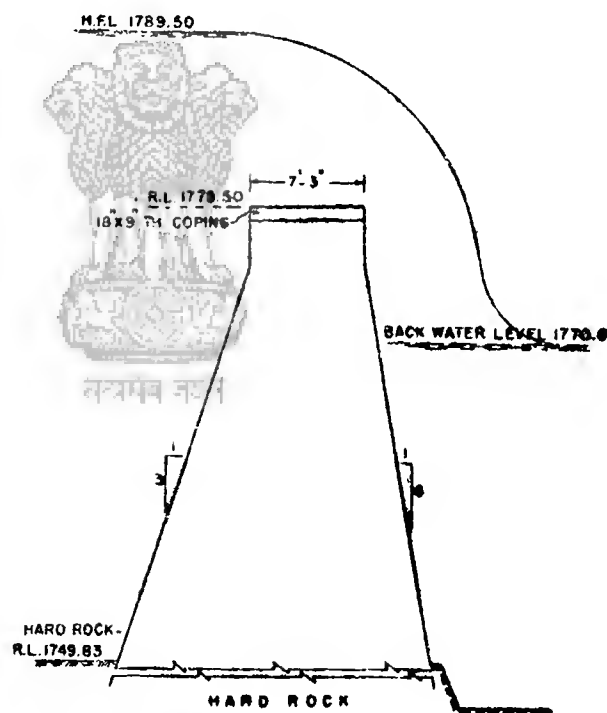
Same as for (1) (i) above. Whether a boat was used or not is not known. The river bed is stated to be not erodible.

(20) **Pravara at Bhandardhara (Maharashtra) :**

Same as for (10) above.

(21) **Pravara at Ozer  
(Maharashtra) :**

Discharges at this weir are the sum total of flows over the weir calculated by formula  $Q=3.09 L H^{3/2}$  for all stages of flow over the weir and the withdrawals through the sluices. Generally, free-fall conditions occur at the weir. The cross-section of the weir is shown in *Figure 3*.



SECTION ACROSS WEIR AT OZER

*Figure 3*

(22) **Pravara at Newasa (Maharashtra) :**

Same as for (1) (i) above. The river bed is reported to be sandy and unstable at this site.

**(23) Mula at Chikalthan (Maharashtra) :**

Same as for (1) (i) above. The river bed at this site is stated to be not erodible.

**(24) Shiv at Khadakwagulgaon (Maharashtra) :**

Same as for (1) (i) above. The condition of the river bed at this site is not known.

**(25) Purna at Sidheshwar (Maharashtra) :**

Same as for (1) (i) above. The river bed is reported to be stable at this site.

**(26) Purna at Purna Bridge (Maharashtra) :**

The discharges at this site are obtained from velocity observations taken by suspending a current meter, about 50 feet down, from the railway bridge and readings of a gauge on a bridge pier. The velocities recorded are surface velocities and are taken in each span at three points, one in the centre of the span and the others at the right-third and left-third. At each point three observations are made and the mean of these is taken.

For velocities higher than about 10 feet, float observations are made; the surface velocities are reduced to mean velocities by multiplying them by 0.84.

Cross-sections at this site are taken twice a year before and after the monsoon.

The river bed is reported to be sandy and erodible at this site.

**(27) Manjra at Ghanpur Anicut (Andhra Pradesh) :**

The river discharge at this site is estimated on the basis of depth of flow over the anicut. The anicut is, however, not straight but tortuous with re-entrant angles. Upstream of the anicut, the river hugs the right bank and then flows parallel to the anicut towards the left flank. The gauge on the left flank is marked only in feet and quarters. Because of parallel flow, the depth of water over the anicut varies along its length and the gauge readings on the two sides are different. Gauges are recorded by separate gauge recorders on each flank and each calculates the discharge by "the usual formula" taking his own gauge reading and the lineal length of the anicut along bends and curves.

**(28) Manjra at Nizamsagar (Andhra Pradesh) :**

Same as for (10) above.

**(29) Alair (Manjra) at Pocharam (Andhra Pradesh) :**

Same as for (10) above.

**(30) Maner at Manair (Andhra Pradesh) :**

Same as for (10) above.

**(31) Siddipetvagu (Maner) at Sanigram (Andhra Pradesh) :**

Same as for (10) above.

**(32) Moruvanchavagu (Maner) at Ramappa Lake (Andhra Pradesh) :**

Same as for (10) above.

**(33) Moruvanchavagu (Maner) at Ghanpur Cheroo (Andhra Pradesh) :**

Same as for (10) above.

(34) *Pranhita at Jafferabad (Maharashtra—Andhra Pradesh)* :

From September 1957 to December 1959, current meter observations were carried out at,  $0.6D$ . The site is reported to be sandy and erodible. Cross-sections were taken twice a year before and after the monsoon.

(35) *Wardha (Pranhita) at Majri (Maharashtra)* :

From August 1955 to March 1958, surface velocities were recorded by a current meter, suspended from the railway bridge; and readings were taken of a gauge on a bridge pier. These were used for calculating the discharges at this site. A factor of 0.84 was employed to convert surface velocities to mean velocities. Cross-sections were taken twice a year, before and after monsoon.

From March 1958, current meter observations are being made from a boat, at  $0.6D$ , about a mile upstream of the bridge. Cross-sections at this site are observed twice a year, before and after the monsoon.

The bed of the river is reported to be sandy and erodible at this site.

(36) *Wardha (Pranhita) at Ballarshah, below the confluence of Wardha and Penganga (Maharashtra)* :

Same as for (35) above. The river bed is reported to be erodible at this site.

(37) *Wainganga (Pranhita) at Lakhanwara (Madhya Pradesh)* :

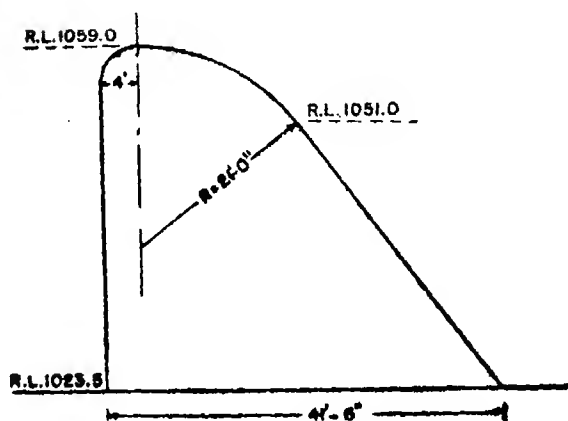
The method adopted at this site is the area-velocity method. The surface velocities are observed by floats and are reduced to mean velocities by multiplying them with 0.8. The river bed at this site is reported to be rocky and not erodible.

(38) *Wainganga (Pranhita) at Dhuti (Madhya Pradesh)* :

The discharges are based on the overflow over the weir, calculated by the formula  $Q = 3.25LH^{3/2}$ , and the canal withdrawals. Generally clear overfall condition occurs at the weir. The cross-section of the anicut is shown in Figure 4.

(39) *Wainganga (Pranhita) at Warsa (Maharashtra)* :

Same as for (7) above except that the observations at the bridge site were started in June 1957 and that at the gauge site, a furlong below, from June 1958. The river bed is reported to be sandy and erodible except for about 200 feet rocky bed on the right flank.



SECTION ACROSS DHUTI ANICUT

Figure 4.

**(40) Penoh (Wainganga) at Soingodi (Madhya Pradesh) :**

Same as for (37) above. The river bed at this site is reported to be not erodible

**(41) Penoh (Wainganga) at Totledoh (Madhya Pradesh) :**

From June 1955 to July 1958 the slope area method was used, taking the value of  $N(k)$  as 0.025 and  $S$  obtained from the difference in the gauge readings of the upstream and downstream gauges at this site. During July 1958 to November 1960, the method adopted was as in (37) above, the floats being thrown from the bank ; cross-sections were taken periodically after monsoon. Since December 1960, current meter observations are made at  $0.6 D$  for velocities up to 3 feet per second and at  $0.2 D$  and  $0.8 D$  for higher velocities. The site is reported to be erodible.

**(42) Indravati at Pathagudem (Andhra Pradesh) :**

Same as for (34) above. However, the site is reported to be partly rocky and partly sandy.

**(43) Sabari at Pulusura (Upper Kolab H.E. Scheme) (Orissa) :**

The flows in Sabari near Pulusura have been gauged during the period 1921 to 1932 and the discharges were calculated from the gauge discharge relationship, based on empirical formulae derived for the weir at Pulusura ; details of the gauge discharge calibration of the weir are not available.

**(44) Sileru (Sabari) at Jalaput (Machkund H.E. Scheme) (Orissa) :**

The discharges of Sileru at Jalaput were calculated from the gauge discharge relationship (based on empirical formulae of weir discharges) derived for the weir constructed in 1942, about a mile above the Duduma falls. Other particulars are not available.

Since the construction of the Jalaput dam the inflows at the dam site are obtained from the capacity table of the Jalaput reservoir.

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## MONTHLY FLOW DATA OF THE GODAVARI RIVER SYSTEM

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सत्यमेव जयते

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 1

River Godavari

Site Gangapur

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .							
07-08 . . .							
08-09 . . .							
09-10 . . .							
10-11 . . .							
1911-12 . . .							
12-13 . . .							
13-14 . . .							
14-15 . . .							
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .							
1921-22 . . .							
22-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
<hr/>							
20 Years' Mean							



सत्यमेव जयते

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 1

River Godavari

Site Gangapur

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .								5.5
07-08 . . .								14.6
08-09 . . .								10.0
09-10 . . .								10.2
10-11 . . .								7.9
1911-12 . . .								5.4
12-13 . . .								17.4
13-14 . . .								21.9
14-15 . . .								22.4
15-16 . . .								12.6
1916-17 . . .								12.3
17-18 . . .								14.8
18-19 . . .								6.2
19-20 . . .								17.2
20-21 . . .								7.7
1921-22 . . .								11.6
22-23 . . .								14.6
23-24 . . .								13.7
24-25 . . .								14.7
25-26 . . .								6.5
<b>20 Years' Mean</b>								<b>12.4</b>

*Note*—The figures for the years 1906-07 to 1919-20 are for seven months, June to December. The figures for the years 1922-23 to 1925-26 are for twelve months from May to April. The position regarding figures for 1920-21 and 1921-22 is not clear.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 1

River Godavari

Site Gangapur

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1945-46*							9
1946-47 . . .	15	1,860	3,221	584	185	236	16.2
47-48 . . .	(Nil)	1,413	1,356	2,134	324	42	13.9
48-49 . . .	64	1,154	1,873	492	242	454	11.4
49-50 . . .	1	382	816	1,020	228	53	6.5
50-51 . . .	Nil	8,435	1,025	2,953	435	160	34.6
1951-52 . . .	1	477	1,544	136	357	43	6.9
52-53 . . .	106	4,512	1,116	97	90	18	15.9
53-54 . . .	833	1,669	6,236	1,484	1,011	10	29.9
54-55 . . .							
55-56 . . .	Nil	931	2,797	(770)	(298)	(99)	13.0
1956-57 . . .	6	2,713	81	55	46	(99)	7.9
57-58 . . .	142	858	3,058	447	100	129	12.7
58-59 . . .	22	1,570	15	Nil	7	10	4.3
59-60 . . .	10	5,426	3,420	115	827	9	26.2
60-61 . . .	28	1,330	2,695	492	22	20	12.4
14 Years' Mean	88	2,338	2,090	770	298	99	15.1

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 1

River Godavari

Site Gangapur

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1945-46* . . .	7	6	4	2	2	Nil	Nil	
1946-47 . . .	32	15	9	6	4	2	0.1	16.3
47-48 . . .	18	13	11	7	3	Nil	Nil	13.9
48-49 . . .	23	9	2	1	1	1	0.1	11.5
49-50 . . .	16	7	3	3	4	1	Nil	6.5
50-51 . . .	22	17	6	2	1	1	0.1	34.7
1951-52 . . .	24	5	2	(Nil)	(Nil)	Nil	0.1	7.0
52-53 . . .	9	4	3	2	2	1	Nil	15.9
53-54 . . .	4	1	1	1	(Nil)	(Nil)	Nil	29.9
54-55* . . .				Nil	Nil	Nil		
55-56 . . .	(15)	44	(5)	3	Nil	Nil	0.1	13.1
1956-57 . . .	(15)	Nil	(5)	10	Nil	Nil	Nil	7.9
57-58 . . .	10	16	Nil	Nil	21	17	0.1	12.8
58-59 . . .	14	6	23	Nil	Nil	Nil	0.1	4.4
59-60 . . .	Nil	3	2	Nil	Nil	Nil	Nil	26.2
60-61 . . .	10	10	Nil	113	66	65	0.7	13.1
14 Years' Mean	15	11	5	11	7	6	0.1	15.2

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 2

River Godavari

Site Nandur Madhmeshwar

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	O	Nov.	
1906	.	.	.				
07	.	.	.				
08	.	.	.				
09	.	.	.				
10	.	.	.				
1911	.	.	.				
12	.	.	.				
13	.	.	.				
14	.	.	.				
15	.	.	.				
1916	.	.	.				
17	.	.	.				
18	.	.	.				
19	.	.	.				
20	.	.	.				
1921							
1922-23	.	.	.				
23-24	.	.	.				
24-25	.	.	.				
25-26	.	.	.				
<b>20 Years' Mean</b>							



सत्यमेव जयते

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 2

River Godavari

Site Nandur Madhmeshwar

Year	Mean discharge (cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906 . . .								63.7
07 . . .								106.5
08 . . .								103.6
09 . . .								56.8
10 . . .								94.3
1911 . . .								21.7
12 . . .								47.8
13 . . .								59.6
14 . . .								109.3
15 . . .								62.1
1916 . . .								85.3
17 . . .								64.1
18 . . .								27.6
19 . . .								106.0
20 . . .								49.0
1921 . . .								60.0
1922-23 . . .								68.3
23-24 . . .								72.0
24-25 . . .								80.9
25-26 . . .								43.9
<b>20 Years' Mean</b>								<b>69.1</b>

Note: The figures for the years 1906 to 1921 are for calendar years and those for the years 1922-23 to 1925-26 are for twelve months from May to April.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 2

River Godavari			Site Nandur Madhmeshwar					
Year	Mean discharge (Cusecs)						Volume (Jun to Nov.) T.M.C	
	June	July	Aug.	Sep.	Oct.	Nov.		
1941-42 . . .	426	24,815	3,282	1,168	782	394	82.5	
42-43 . . .	501	24,384	9,583	7,875	674	394	115.5	
43-44 . . .	274	15,760	6,546	4,318	5,795	159	87.5	
44-45 . . .	470	25,107	20,765	3,576	1,475	350	138.2	
45-46 . . .	676	13,996	11,063	5,126	1,156	328	86.2	
1946-47 . . .	321	6,325	17,599	7,558	892	489	88.1	
47-48 . . .	446	6,066	9,697	9,743	2,783	351	77.1	
48-49 . . .	484	8,936	8,372	2,451	946	309	57.3	
49-50 . . .	309	3,025	9,927	6,856	4,154	469	65.6	
50-51 . . .	(434)	24,766	6,847	7,186	1,899	(360)	110.3	
1951-52 . . .	711	2,557	10,606	688	2,165	398	45.6	
52-53 . . .	749	17,729	9,379	711	429	552	78.8	
53-54 . . .	1,176	3,531	21,439	1,682	1,063	560	78.6	
54-55 . . .	564	7,425	7,483	19,844	3,058	479	102.2	
55-56 . . .	695	1,003	10,162	9,871	4,937	965	78.0	
1956-57 . . .	419	17,139	19,614	1,428	8,392	376	134.5	
57-58 . . .	978	4,902	7,666	1,538	545	557	43.0	
58-59 . . .	712	17,289	7,174	10,799	1,037	629	99.7	
59-60 . . .	589	12,262	14,698	11,866	3,159	874	115.3	
60-61 . . .	337	2,582	5,841	2,948	512	356	33.3	
20 Years' Mean	564	11,980	10,887	6,012	2,293	467	85.5	

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 2

River Godavari

Site Nandur Madhmeshwar

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1941-42 . . .	301	279	260	238	388	428	4.8	87.3
42-43 . . .	378	177	434	260	388	409	5.3	120.8
43-44 . . .	506	344	355	388	418	377	6.3	93.8
44-45 . . .	332	380	368	328	494	444	6.2	144.4
45-46 . . .	253	318	345	340	359	456	5.4	91.6
1946-47 . . .	238	159	329	376	571	476	5.3	93.4
47-48 . . .	342	362	396	433	553	482	6.8	83.9
48-49 . . .	145	404	256	414	392	592	5.8	63.1
49-50 . . .	497	(311)	(339)	(350)	(427)	(455)	6.1	71.7
50-51 . . .	(338)	378	308	371	479	435	6.0	116.3
1951-52 . . .	319	437	439	368	444	367	6.4	52.0
52-53 . . .	230	319	222	290	254	286	4.3	83.1
53-54 . . .	265	366	284	339	331	392	5.2	83.8
54-55 . . .	308	416	404	528	445	547	7.0	109.2
55-56 . . .	374	423	389	(402)	(401)	388	6.2	79.2
1956-57 . . .	252	531	402	468	473	514	7.0	141.5
57-58 . . .	594	442	456	406	439	336	7.0	50.0
58-59 . . .	440	425	408	358	507	556	7.1	106.8
59-60 . . .	982	568	360	537	313	(436)	8.4	123.7
60-61 . . .	594	307	348	323	400	535	6.5	39.8
<b>20 Years' Mean</b>	<b>387</b>	<b>367</b>	<b>355</b>	<b>376</b>	<b>414</b>	<b>446</b>	<b>6.2</b>	<b>91.8</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 3

River Godavari

Site Puntumba

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1950-51*							
1951-52	555	4,670	5,581	1,528	3,936	1,340	46.8
52-53	383	18,713	5,876	813	460	48	70.2
53-54	1,364	3,326	(8,503)	1,970	2,796	548	49.2
54-55	323	6,556	4,735	11,548	2,840	154	69.0
55-56	180	517	8,021	8,849	5,236	696	62.1
1956-57	265	15,632	14,051	8,090	14,487	2,554	146.6
57-58	1,712	4,270	6,652	1,469	253	144	38.5
58-59	352	22,819	7,791	12,800	1,360	272	120.4
59-60	1,619	10,935	14,054	11,051	3,194	832	110.5
60-61*	734	3,829	7,019	5,371	1,234	82	48.4
9 Years' Mean	750	9,715	8,363	6,458	3,840	732	79.3

SERIAL No. 4

River Godavari

Site Toka

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1954-55	1,470	7,343	7,499	13,909	7,224	277	101.0
55-56	548	2,758	12,581	18,730	12,021	1,602	127.4
1956-57	1,116	25,553	25,244	13,630	22,507	4,232	245.5
57-58	4,647	9,260	12,149	3,442	624	322	80.7
58-59	611	29,746	16,684	18,942	6,371	1,477	197.3
59-60	2,935	20,014	26,172	22,077	8,487	2,666	218.1
60-61*	1,510	6,111	14,805	13,907	5,642	359	112.0
6 Years' Mean	1,888	15,862	16,722	15,122	9,622	1,763	161.7

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 3

River Godavari

Site Puntumba

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1950-51*					20	16		
1951-52	134	83	69	62	32	36	1.2	48.0
52-53	43	39	34	22	(15)	16	0.4	70.6
53-54	57	74	59	47	25	14	0.7	49.9
54-55	192	210	217	79	62	76	2.2	71.2
55-56	169	108	91	63	33	208	1.8	63.9
1956-57	502	251	179	112	167	54	3.2	149.8
57-58	77	88	69	48	36	252	1.5	40.0
58-59	150	108	82	53	79	225	1.8	122.2
59-60	96	89	68	44	36	128	1.2	111.7
60.61*	75							
9 Years' Mean	157	117	96	59	54	112	1.6	80.8

SERIAL No. 4

River Godavari

Site Toka

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1954-55	409	484	368	175	120	118	4.4	105.4
55-56	520	395	323	253	149	919	6.9	134.3
1956-57	1,493	664	455	298	260	212	9.0	254.5
57-58	226	247	157	101	77	309	3.0	83.7
58-59	453	302	228	127	139	279	4.0	201.3
59-60	269	242	217	125	76	151	2.7	220.8
60.61*	223							
6 Years' Mean	558	389	293	180	137	336	5.0	166.7

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 5

River Godavari

Site Mungi

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C
	June	July	Aug.	Sep.	Oct.	Nov.	
1954-55	1,998	19,005	14,594	33,493	10,881	1,162	214.1
55-56	3,182	7,737	22,130	31,778	20,720	3,129	234.2
1956-57	3,987	31,488	23,953	26,875	29,718	9,570	332.9
57-58	11,874	25,549	37,936	13,189	3,771	500	246.4
58-59	3,708	45,522	31,571	38,970	7,069	2,242	341.8
59-60	4,813	24,629	35,003	34,585	15,223	3,416	311.6
60-61*	6,550	11,709	20,665	23,989	8,746	503	190.6
6 Years' Mean	4,927	25,655	27,531	29,816	14,564	3,336	280.2

SERIAL No. 6

River Godavari

Site Soan Bridge

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep	Oct.	Nov.	
1946-47	3,023	38,291	64,765	50,471	9,404	42,072	549.0
47-48	4,390	18,974	85,627	134,473	108,622	6,392	947.6
48-49	14,191	41,866	60,751	104,560	44,466	65,790	872.2
49-50	20,346	64,249	53,884	188,711	73,346	13,699	1,090.1
50-51	3,307	38,404	32,627	129,599	26,048	3,948	614.8
1951-52	21,075	103,877	66,105	27,216	38,842	5,149	697.8
52-53	6,606	43,321	45,320	19,560	11,167	2,257	340.8
53-54	41,813	34,127	99,433	89,181	69,367	7,224	902.0
54-55	10,961	57,533	75,058	124,228	99,101	7,741	991.0
55-56	35,580	63,118	238,625	147,505	70,947	17,174	1,517.2
1956-57	3,905	127,940	170,590	110,500	75,769	50,537	1,430.0
57-58	13,959	101,252	217,075	40,426	20,658	7,861	1,069.3
58-59	5,058	93,092	164,481	165,054	24,735	7,489	1,216.4
59-60	10,852	50,428	106,356	136,900	80,933	13,139	1,053.8
60-61	16,347	35,538	37,785	44,194	30,730	4,479	447.3
15 Years' Mean	14,094	60,801	101,235	100,839	52,272	16,997	916.0

\* Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 5

River Godavari

Site Mungli

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1954-55 . . . . .	980	390	317	179	133	145	5.6	219.7
55-56 . . . . .	714	470	313	205	139	2,863	12.6	246.8
1956-57 . . . . .	2,881	2,567	757	438	343	316	19.3	352.2
57-58 . . . . .	176	303	216	157	129	168	2.9	249.3
58-59 . . . . .	1,244	395	269	157	145	239	6.5	348.3
59-60 . . . . .	466	293	214	133	79	188	3.6	315.2
60-61* . . . . .	299							
6 Years' Mean	1,077	736	348	212	161	653	8.4	288.6

SERIAL No. 6

River Godavari

Site Soan Bridge

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1946-47 . . . . .	7,893	3,692	2,448	2,101	1,259	349	46.7	595.7
47-48 . . . . .	5,010	2,998	2,535	1,242	742	295	33.8	981.4
48-49 . . . . .	18,157	5,771	3,026	1,748	984	426	79.8	952.0
49-50 . . . . .	6,472	3,945	3,265	2,073	1,165	459	45.6	1,135.7
50-51 . . . . .	2,034	1,446	1,004	637	629	127	15.3	630.1
1951-52 . . . . .	2,823	1,468	1,832	795	428	190	19.8	717.5
52-53 . . . . .	1,104	747	589	313	184	69	7.9	348.7
53-54 . . . . .	2,863	1,941	1,341	1,117	1,729	465	24.8	926.8
54-55 . . . . .	4,138	2,860	2,533	1,526	959	567	33.0	1,624.0
55-56 . . . . .	6,550	4,382	2,801	2,500	1,380	624	48.2	1,565.4
1956-57 . . . . .	15,929	5,264	3,667	3,093	2,991	1,326	85.4	1,515.4
57-58 . . . . .	3,231	2,329	2,094	1,344	1,115	775	28.6	1,097.9
58-59 . . . . .	7,032	2,888	2,164	1,417	943	668	39.7	1,256.1
59-60 . . . . .	5,251	3,568	2,608	2,616	1,078	824	42.2	1,096.0
60-61 . . . . .	2,353	1,361	1,004	598	367	739	16.9	464.2
15 Years' Mean	6,056	2,977	2,194	1,541	1,064	527	37.9	953.9

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 7

River Godavari

Site Mancherla

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T. M. C
	June	July	Aug.	Sep.	Oct.	Nov.	
1955-56 . . .			357,767	224,235	159,701	19,872	
1956-57 . . .	15,961	121,867	158,437	90,250	75,730	45,674	<b>1,347.3</b>
57-58 . . .	7,650	42,326	180,770	45,163	22,161	9,748	<b>819.2</b>
58-59 . . .	419	73,972	100,940	139,005	23,646	5,474	<b>907.4</b>
59-60 . . .		46,409	104,204	119,781	86,088	11,241	
60-61 . . .							

SERIAL No. 8

River Godavari

Site Dummagudem

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1951-52 . . .							
52-53 . . .							
53-54 . . .		95,189	572,486	216,670	129,181	29,393	
54-55 . . .							
55-56 . . .							
1956-57 . . .							
57-58 . . .	9,625	210,805	577,130	171,418	39,086	22,645	<b>2,743.0</b>
58-59 . . .		228,792	388,220	334,518	150,766	31,543	
59-60 . . .	16,881	357,926	793,665	595,626	187,402	37,002	<b>5,270.0</b>
60-61 . . .	23,484	264,982	384,302	122,957	105,186	21,312	<b>2,455.5</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 7

River Godavari

Site Mancherla

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	Dec. to May T.M.C.	Annual T.M.C.
1955-56 . . .	3,888	2,516	1,368	1,081	655	932	27.6	
1956-57 . . .	12,077	5,143	3,142	3,114	2,202	612	69.3	1,416.6
57-58 . . .	2,909	1,271	1,212	978	662	567	19.9	839.1
58-59 . . .	7,070	2,090	1,159					
59-60 . . .	86,087							
60-61 . . .								

SERIAL No. 8

River Godavari

Site Duramagudem

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	Dec. to May T.M.C.	Annual T.M.C.
1951-52 . . .								
52-53 . . .					1,040			
53-54 . . .	10,433	6,579						
54-55 . . .								
55-56 . . .								
1956-57 . . .								
57-58 . . .	8,876	5,508	3,416	2,475	1,440			
58-59 . . .	23,931	9,627	7,255	4,490	2,488	1,378	129.6	
59-60 . . .	16,532	11,959	7,296	6,011	3,408	1,565	128.7	5,393.7
60-61 . . .	11,008	6,877	5,060	3,173	1,664	1,171	76.0	2,891.5

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 9

River **Godavari**

Site **Dowlaishwaram**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct	Nov.	
1901-02 . . .	2,716	160,171	451,569	207,418	51,795	17,596	<b>2,367.4</b>
02-03 . . .	1,291	80,281	81,470	310,118	30,988	15,334	<b>1,363.0</b>
03-04 . . .	2,813	276,385	520,841	345,261	301,750	56,719	<b>3,992.7</b>
04-05 . . .	14,081	145,548	148,291	284,320	81,407	15,441	<b>1,818.5</b>
05-06 . . .	1,855	131,181	135,446	421,579	96,159	11,791	<b>2,099.9</b>
1906-07 . . .	20,411	382,805	279,273	378,104	65,793	15,089	<b>3,021.5</b>
07-08 . . .	41,866	1,221,604	638,864	232,590	27,042	8,559	<b>5,789.0</b>
08-09 . . .	1,359	254,477	603,573	423,935	191,224	15,279	<b>3,952.3</b>
09-10 . . .	14,333	336,991	275,646	182,221	45,528	8,377	<b>2,294.0</b>
10-11 . . .	27,337	326,594	397,876	501,312	299,46	86,877	<b>4,338.1</b>
1911-12 . . .	6,760	6,774	345,904	372,946	153,558	20,053	<b>2,392.1</b>
12-13 . . .	2,549	161,804	552,452	310,014	51,956	8,824	<b>2,885.4</b>
13-14 . . .	30,681	338,580	291,139	271,657	47,652	8,095	<b>2,618.9</b>
14-15 . . .	83,673	420,767	598,650	735,147	133,361	10,566	<b>5,237.4</b>
15-16 . . .	49,392	174,746	365,403	453,074	40,556	31,402	<b>2,939.1</b>
1916-17 . . .	76,122	220,820	524,293	414,040	252,761	146,081	<b>4,321.8</b>
17-18 . . .	69,348	360,672	375,062	716,146	412,050	103,211	<b>5,377.8</b>
18-19 . . .	143,441	163,162	440,434	203,604	27,767	11,215	<b>2,619.7</b>
19-20 . . .	135,417	263,963	500,299	256,559	210,947	33,333	<b>3,714.4</b>
20-21 . . .	3,721	94,248	122,974	82,663	25,843	8,474	<b>896.9</b>
1921-22 . . .	88,374	208,253	448,933	334,662	69,197	14,287	<b>3,079.0</b>
22-23 . . .	8,431	279,477	225,394	492,456	44,788	32,250	<b>2,854.2</b>
23-24 . . .	1,374	149,483	311,914	321,701	144,372	31,239	<b>2,540.9</b>
24-25 . . .	1,769	30,833	221,974	377,543	214,566	32,120	<b>2,318.3</b>
25-26 . . .	12,682	240,040	516,313	313,871	97,706	18,790	<b>3,182.7</b>
1926-27 . . .	3,750	117,300	511,941	380,024	108,076	11,705	<b>2,999.9</b>
27-28 . . .	98,414	455,461	403,674	207,035	161,235	34,621	<b>3,614.4</b>
28-29 . . .	14,760	281,587	224,102	357,698	281,655	35,024	<b>3,165.1</b>
29-30 . . .	36,957	250,314	259,515	391,415	125,596	14,460	<b>2,849.7</b>
30-31 . . .	10,173	293,750	310,552	288,882	91,102	51,576	<b>2,771.5</b>
<b>30 Years' Mean</b>	<b>33,528</b>	<b>260,936</b>	<b>369,459</b>	<b>352,266</b>	<b>129,530</b>	<b>30,280</b>	<b>3,113.9</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 9

River **Godavari**

Site **Dowlaiswaram**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1901-02 . . .	6,238	4,692	2,878	2,091	1,068	1,840	49.6	2,417.0
02-03 . . .	7,919	5,537	3,142	2,071	966	731	53.6	1,416.6
03-04 . . .	17,739	7,944	5,840	3,224	1,890	1,014	99.6	4,092.3
04-05 . . .	7,925	5,500	3,987	2,157	1,421	1,855	60.0	1,878.5
05-06 . . .	5,594	3,807	2,431	1,936	1,279	644	41.3	2,141.2
1906-07 . . .	7,672	9,466	4,125	3,602	2,212	2,057	76.7	3,098.2
07-08 . . .	5,161	4,850	3,363	2,559	4,022	1,946	57.7	5,846.7
08-09 . . .	10,736	6,109	4,286	2,374	3,419	7,185	90.1	4,042.4
09-10 . . .	5,925	9,459	4,092	2,109	1,384	1,327	63.9	2,357.9
10-11 . . .	21,997	8,886	5,900	4,739	1,770	12	114.3	4,452.4
1911-12 . . .	15,923	5,398	9,311	4,783	1,930	549	99.7	2,491.8
12-13 . . .	4,943	5,609	3,078	2,762	1,888	955	50.5	2,935.9
13-14 . . .	5,429	4,972	3,585	2,129	2,375	4,462	49.6	2,668.5
14-15 . . .	5,819	5,318	5,315	5,514	4,314	925	71.2	5,308.6
15-16 . . .	13,454	6,892	5,881	2,937	1,925	866	84.4	3,023.5
1916-17 . . .	23,204	10,702	10,931	6,626	6,833	797	154.7	4,476.5
17-18 . . .	17,073	10,231	9,509	8,541	7,091	8,897	161.2	5,539.0
18-19 . . .	9,315	8,269	10,921	8,307	5,517	777	112.2	2,731.9
19-20 . . .	13,553	9,392	8,492	4,703	2,546	1,061	104.8	3,819.2
20-21 . . .	5,649	3,537	3,056	2,025	1,648	530	43.1	940.0
1921-22 . . .	8,022	7,341	6,612	2,880	1,821	1,574	73.8	3,152.8
22-23 . . .	16,720	8,949	5,794	3,845	2,542	772	101.8	2,956.0
23-24 . . .	9,600	7,484	5,419	3,003	2,297	588	74.9	2,615.8
24-25 . . .	12,696	6,264	4,941	3,337	2,459	9,236	102.8	2,421.1
25-26 . . .	8,563	8,220	8,334	6,178	5,206	5,561	110.0	3,292.7
1926-27 . . .	8,628	7,114	5,517	3,916	2,518	1,471	76.4	3,076.3
27-28 . . .	12,766	7,274	6,930	4,872	2,838	1,223	94.8	3,709.2
28-29 . . .	12,025	7,670	8,165	6,455	3,102	2,487	104.5	3,269.6
29-30 . . .	7,442	7,671	4,883	3,385	2,999	3,517	78.5	2,928.2
30-31 . . .	13,723	7,221	5,039	2,685	2,774	651	84.4	2,855.9
30 Years' Mean	10,715	7,059	5,725	3,858	2,802	2,184	84.7	3,198.5

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 9

River **Codavari**

Site **Dowlaiswaram**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1931-32 . . .	2,395	214,888	491,240	424,520	529,122	114,482	<b>4,711.8</b>
32-33 . . .	11,644	419,283	418,257	380,706	87,718	58,417	<b>3,646.6</b>
33-34 . . .	103,911	272,712	608,589	580,851	179,939	57,089	<b>4,765.2</b>
34-35 . . .	8,244	335,220	673,502	386,494	212,870	67,362	<b>4,469.8</b>
35-36 . . .	6,072	357,459	329,908	479,419	80,687	24,990	<b>3,380.3</b>
1936-37 . . .	203,024	389,558	427,197	368,488	111,264	84,523	<b>4,186.0</b>
37-38 . . .	6,939	354,390	336,753	269,073	162,137	31,143	<b>3,081.6</b>
38-39 . . .	128,944	431,065	349,519	481,033	344,576	49,076	<b>4,721.9</b>
39-40 . . .	2,964	186,748	295,325	301,777	75,877	34,643	<b>2,374.1</b>
40-41 . . .	52,606	520,464	712,716	137,164	73,172	28,648	<b>4,065.1</b>
1941-42 . . .	8,972	196,653	136,957	127,152	33,845	10,063	<b>1,363.2</b>
42-43 . . .	23,524	439,735	563,365	375,592	55,315	18,028	<b>3,916.1</b>
43-44 . . .	24,549	193,716	195,436	396,321	165,009	35,749	<b>2,667.9</b>
44-45 . . .	4,057	334,319	579,880	302,279	129,463	71,750	<b>3,775.4</b>
45-46 . . .	6,077	371,791	400,308	586,603	146,670	34,492	<b>4,086.5</b>
1946-47 . . .	51,463	311,372	596,305	282,699	60,571	58,816	<b>3,612.0</b>
47-48 . . .	4,656	298,853	412,122	502,411	260,167	36,400	<b>4,009.6</b>
48-49 . . .	5,568	161,697	350,164	344,669	201,110	95,211	<b>3,064.3</b>
49-50 . . .	19,401	285,555	395,102	420,403	328,037	91,463	<b>4,078.7</b>
50-51 . . .	13,768	258,466	247,857	295,859	51,844	15,956	<b>2,251.2</b>
1951-52 . . .	8,777	226,726	509,577	170,506	90,339	16,702	<b>2,722.2</b>
52-53 . . .	2,306	105,664	330,878	270,439	113,358	16,106	<b>2,221.5</b>
53-54 . . .	82,968	123,999	871,603	287,714	198,985	41,991	<b>4,269.3</b>
54-55 . . .	27,485	273,790	370,033	378,504	177,206	22,528	<b>3,309.7</b>
55-56 . . .	42,754	219,491	493,489	618,008	367,025	88,369	<b>4,834.5</b>
1956-57 . . .	41,523	494,214	622,690	295,596	217,847	93,465	<b>4,691.1</b>
57-58 . . .	8,431	284,545	712,648	317,652	53,704	34,119	<b>3,748.4</b>
58-59 . . .	3,272	342,169	359,807	647,031	219,915	43,703	<b>4,268.1</b>
59-60 . . .	13,683	376,598	934,712	1,155,493	243,193	50,646	<b>7,325.4</b>
60-61 . . .	13,990	265,932	399,730	208,863	158,979	20,163	<b>2,838.7</b>
<b>30 Years' Mean</b>	<b>31,132</b>	<b>301,569</b>	<b>470,856</b>	<b>393,111</b>	<b>170,998</b>	<b>48,203</b>	<b>3,748.5</b>
<b>60 Years' Mean</b>	<b>32,330</b>	<b>281,252</b>	<b>420,157</b>	<b>372,689</b>	<b>150,264</b>	<b>39,241</b>	<b>3,431.2</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 9

River Godavari

Site Dowlaiswaram

Year	Mean discharge (Cusces)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1931-32 . . .	25,927	12,435	8,398	7,495	3,936	1,807	158.8	4,870.6
32-33 . . .	18,210	9,949	8,631	6,729	3,732	5,740	139.4	3,786.0
33-34 . . .	25,764	16,282	9,962	7,547	5,025	4,069	180.8	4,946.0
34-35 . . .	20,050	13,013	10,019	6,913	3,635	5,612	155.7	4,625.5
35-36 . . .	11,353	8,107	11,656	7,890	3,883	245	113.2	3,493.5
1936-37 . . .	23,895	8,272	8,980	8,428	24,622	10,084	221.3	4,407.3
37-38 . . .	12,402	8,382	8,295	5,027	3,994	2,403	106.1	3,187.7
38-39 . . .	19,877	9,540	8,190	5,962	5,326	730	130.4	4,852.3
39-40 . . .	10,190	6,522	7,089	4,596	3,274	6,553	101.0	2,475.1
40-41 . . .	13,897	7,818	5,700	5,358	3,310	1,526	99.0	4,164.1
1941-42 . . .	6,677	4,759	3,168	4,345	2,566	1,047	59.4	1,422.6
42-43 . . .	9,524	12,518	12,017	4,997	3,033	1,728	114.0	4,030.1
43-44 . . .	10,293	7,450	7,423	10,600	10,556	2,622	129.0	2,796.9
44-45 . . .	17,625	10,456	7,736	5,013	3,278	2,030	121.2	3,896.6
45-46 . . .	17,636	12,861	8,803	6,246	5,375	3,828	143.8	4,230.3
1946-47 . . .	24,432	11,271	10,656	9,001	5,015	448	159.7	3,771.7
47-48 . . .	16,302	12,850	9,933	6,472	3,625	2,224	135.7	4,145.3
48-49 . . .	63,324	12,945	10,293	6,460	4,381	3,681	267.8	3,332.1
49-50 . . .	19,141	11,978	9,866	9,146	6,794	2,429	155.9	4,234.6
50-51 . . .	8,656	6,643	5,046	3,375	9,944	1,358	91.6	2,342.8
1951-52 . . .	9,358	7,141	4,756	3,690	2,524	1,492	76.5	2,798.7
52-53 . . .	10,122	6,707	4,821	2,934	2,219	1,536	74.6	2,296.1
53-54 . . .	11,328	9,177	6,292	3,950	3,255	2,047	94.6	4,363.9
54-55 . . .	10,821	8,245	5,956	4,122	2,883	3,824	94.2	3,403.9
55-56 . . .	22,428	14,727	8,539	5,472	4,044	2,034	151.5	4,986.0
1956-57 . . .	27,707	15,373	9,449	9,169	7,782	2,456	189.7	4,880.8
57-58 . . .	11,694	7,871	6,171	5,022	3,427	4,539	101.9	3,850.3
58-59 . . .	28,202	11,590	7,763	4,986	4,557	3,143	158.9	4,427.0
59-60 . . .	17,615	11,895	9,556	6,727	5,588	4,052	146.4	7,471.8
60-61 . . .	10,418	7,821	5,420	4,060	3,322	4,233	92.7	2,931.4
30 Years. Mean	17,829	10,153	8,019	6,058	5,164	2,984	132.2	3,880.7
60 Years. Mean	14,272	8,606	6,872	4,958	3,983	2,584	108.4	3,539.6

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 10

River **Darna**

Site **Darna (Lake Beale)**

Year	Mean Discharge Cusecs						Volume (June to Nov.)
	June	July	Aug.	Sep.	Oct.	Nov.	
1906	.	.	.				
07	.	.	.				
08	.	.	.				
09	.	.	.				
10	.	.	.				
1911	.	.	.				
12	.	.	.				
13	.	.	.				
14	.	.	.				
15	.	.	.				
1916	.	.	.				
17	.	.	.				
18	.	.	.				
19	.	.	.				
20	.	.	.				
1921	.	.	.				
22	.	.	.				
23-24*	.	.	.				
24-25*	.	.	.				
19 Years' Mean							

\*From 1st May to 30th April

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 10

River **Darna**

Site **Darna (Lake Beale)**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906 . . .								21.1
07 . . .								36.2
08 . . .								17.4
09 . . .								13.8
10 . . .								24.1
1911 . . .								16.4
12 . . .								28.0
13 . . .								41.0
14 . . .								30.6
15 . . .								19.2
1916 . . .								21.9
17 . . .								34.1
18 . . .								9.7
19 . . .								27.6
20 . . .								21.4
1921 . . .								25.8
22 . . .								29.2
23-24* .								21.3
24-25* . . .								21.2
19 Years' Mean								24.2

\*From 1st May to 30th April.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 10

River Darna

Site Darna (Lake Beale)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sept.	Oct.	Nov.	
1941-42 . . .	628	7,032	2,662	447	76	92	29.1
42-43 . . .	605	11,977	2,983	2,163	17	107	47.6
43-44 . . .	563	9,189	2,989	1,345	719	96	39.7
44-45 . . .	348	10,855	7,961	1,804	27	123	56.4
45-46 . . .	636	13,234	5,659	1,889	131	96	57.7
1946-47 . . .	754	7,643	8,869	1,780	60	196	51.6
47-48 . . .	138	3,577	4,414	4,125	294	88	33.5
48-49 . . .	335	3,535	3,835	984	277	761	26.0
49-50 . . .	54	3,206	5,538	4,004	630	115	35.9
50-51 . . .	(451)	10,964	3,034	2,866	393	(186)	47.7
1951-52 . . .	118	4,347	6,754	298	701	142	33.1
52-53 . . .	1,000	10,731	3,367	245	98	397	42.2
53-54 . . .	1,348	2,665	9,332	577	120	178	37.9
54-55 . . .	357	6,138	3,895	7,994	402	67	49.7
55-56 . . .	325	2,400	6,882	4,925	1,175	87	41.7
1956-57 . . .	190	12,271	10,002	2,746	1,481	106	71.5
57-58 . . .	1,062	12,387	6,567	678	75	53	55.7
58-59 . . .	117	9,706	5,640	9,110	75	96	65.4
59-60 . . .	107	11,251	7,848	4,937	506	122	65.9
60-61 . . .	534	3,781	3,512	825	376	42	24.1
20 Years' Mean	484	7,844	5,587	2,687	382	158	45.6

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No.10

River **Darna**

Site **Darna (Lake Beale)**

Year	Mean discharge (Cusecs)						Volume	
	Dec	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1941-42 . . .	84	103	84	80	50	46	<b>1.1</b>	<b>30.2</b>
42-43 . . .	84	65	99	130	115	61	<b>1.4</b>	<b>49.0</b>
43-44 . . .	126	111	65	104	188	57	<b>1.8</b>	<b>41.5</b>
44-45 . . .	50	134	73	115	160	84	<b>1.6</b>	<b>58.0</b>
45-46 . . .	103	84	76	92	146	49	<b>1.4</b>	<b>59.1</b>
1946-47 . . .	80	69	23	96	172	245	<b>1.9</b>	<b>53.5</b>
47-48 . . .	88	80	57	60	99	95	<b>1.3</b>	<b>34.8</b>
48-49 . . .	176	145	157	34	38	103	<b>1.8</b>	<b>27.8</b>
49-50 . . .	84	115	38	(84)	(113)	(84)	<b>1.3</b>	<b>37.2</b>
50-51 . . .	(97)	43	85	49	53	16	<b>0.8</b>	<b>48.5</b>
1951-52 . . .	80	97	71	90	99	41	<b>1.3</b>	<b>34.4</b>
52-53 . . .	59	75	116	109	146	41	<b>1.5</b>	<b>43.7</b>
53-54 . . .	72	119	55	112	82	112	<b>1.4</b>	<b>39.3</b>
54-55 . . .	64	72	70	32	Nil	13	<b>0.7</b>	<b>50.4</b>
55-56 . . .	65	52	40	40	42	10	<b>0.6</b>	<b>42.3</b>
1956-57 . . .	77	42	(60)	(61)	(56)	(47)	<b>0.8</b>	<b>72.4</b>
57-58 . . .	57	46	19	19	34	15	<b>0.5</b>	<b>56.2</b>
58-59 . . .	49	107	42	34	49	141	<b>1.1</b>	<b>66.5</b>
59-60 . . .	57	54	42	26	34	34	<b>0.7</b>	<b>66.6</b>
60-61 . . .	53	92	84	84	16	15	<b>0.7</b>	<b>24.8</b>
20 Years' Mean	<b>80</b>	<b>85</b>	<b>68</b>	<b>73</b>	<b>85</b>	<b>65</b>	<b>1.2</b>	<b>46.8</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 11

River **Darna**

Site **Chehadi**

Year	Mean discharge (Cusecs)						Volume (June to Dec) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1949-50 . . .	155	2,105	4,234	5,469	1,940	178	<b>37.2</b>
50-51 . . .	264	7,550	3,517	2,626	939	286	<b>40.3</b>
1951-52 . . .	271	1,729	5,643	352	950	159	<b>24.2</b>
52-53* . . .	9,539		5,611	492	1,188	675	
53-54* . . .	227	1,218		515	286	402	
54-55* . . .	240		3,809		767	81	
55-56 . . .	388	768	5,841	4,061	1,878	145	<b>34.6</b>
1956-57 . . .	315	11,760	6,398	2,453	3,142	180	<b>94.7</b>
57-58 . . .	1,256	3,110	7,124	798	350	123	<b>34.0</b>
58-59 . . .	231	9,820	3,263	4,468	185	270	<b>48.4</b>
59-60 . . .	376	5,896	10,086	6,580	978	226	<b>64.1</b>
60-61* . . .	118	2,150	3,146	1,084	317	272	<b>18.8</b>
<b>8 Years' Mean</b>	<b>407</b>	<b>5,342</b>	<b>5,763</b>	<b>3,351</b>	<b>1,295</b>	<b>196</b>	<b>43.4</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 11

River Darna

Site Chehadi

Year	Mean discharge (Cusecs)						Volume	
	Dec,	Jan,	Feb,	Mar,	Apr,	May	(Dec. to May) T.M.C.	Annual T.M.C.
1949-50 . . .	190	250	224	204	(274)	(360)	3.9	41.1
50-51 . . .	293	302	302	294	360	(360)	5.0	45.3
1951-52 . . .	304	401	387	353	394	842	7.1	31.3
52-53* . . .	1,462			280	269	238		
53-54* . . .	230		207	329	369	362		
54-55* . . .	63	34	190	332	281	351	3.3	
55-56 . . .	225	160	40	199	280	265	3.0	37.6
1956-57 . . .	107	383	230	122	269	405	4.0	68.7
57-58 . . .	168	86	177	160	151	193	2.3	36.3
58-59 . . .	282	331	219	62	280	264	3.8	52.2
59-60 . . .	302	401	334	335	181	189	4.6	68.7
60-61* . . .	360							
8 Years' Mean	234	289	239	216	274	360	4.2	47.6

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 12

River Aundh Nalla (Darna)

Site Padli (Mukne)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .							
07-08 . . .							
08-09 . . .							
09-10 . . .							
10-11 . . .							
1911-12 . . .							
12-13 . . .							
13-14 . . .							
14-15 . . .							
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .							
1921-22 . . .							
22-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
20 Years' Mean							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 12

River Aundh Nalla (Darna)

Site Padli (Mukne)

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .								6.8
07-08 . . .								11.0
08-09 . . .								5.3
09-10 . . .								15.0
10-11 . . .								12.0
1911-12 . . .								2.7
12-13 . . .								13.5
13-14 . . .								4.3
14-15 . . .								9.8
15-16 . . .								3.2
1916-17 . . .								3.7
17-18 . . .								4.0
18-19 . . .								1.6
19-20 . . .								4.0
20-21 . . .								4.0
1921-22 . . .								3.7
22-23 . . .								Nil
23-24 . . .								7.9
24-25 . . .								11.1
25-26 . . .								2.7
20 Years' Mean								6.3

Note : The figures for the years 1906-07 to 1919-20 are for seven months, June to December.  
The figures for the years 1922-23 to 1925-26 are for twelve months from May to April.  
The position regarding figures for 1920-21 and 1921-22 is not clear.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 12

River Aundh Nalla (Darna)

Site Padli (Mukne)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Seq.	Oct.	Nov.	
1948-49 . . .	12	555	314	166	63	560	<b>4.4</b>
49-50 . . .	Nil	354	870	795	45	4	<b>5.4</b>
50-51 . . .	Nil	2,355	540	824	56	2	<b>9.9</b>
1951-52 . . .	Nil	211	535	47	269	(20)	<b>2.9</b>
52-53 . . .	(Nil)	1,674	834	29	27	2	<b>6.9</b>
53-54 . . .	(Nil)	469	1,720	28	36	10	<b>6.1</b>
54-55* . . .	Nil		464		162	16	
55-56 . . .	Nil	216	997	1,287	175	17	<b>7.1</b>
1956-57 . . .							
57-58 . . .							
58-59 . . .	Nil	1,984	373	784	23	6	<b>8.4</b>
59-60 . . .	4	1,591	1,022	841	133	(15)	<b>9.6</b>
60-61 . . .	Nil	445	494	73	31	1	<b>2.8</b>
10 Years' Mean	<b>2</b>	<b>985</b>	<b>770</b>	<b>487</b>	<b>86</b>	<b>64</b>	<b>6.4</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 12

River **Aundh Nalla (Darna)**

**Padli (Mukne)**

Year	Mean discharge (cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1948-49 . . . . .	25	2	Nil	Nil	Nil	Nil	<b>0.1</b>	<b>4.5</b>
49-50 . . . . .	1	Nil	1	Nil	Nil	Nil	<b>Nil</b>	<b>5.4</b>
50-51 . . . . .	Nil	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	<b>Nil</b>	<b>9.9</b>
1951-52 . . . . .	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	<b>Nil</b>	<b>2.9</b>
52-53 . . . . .	2	1	1	(Nil)	(Nil)	(Nil)	<b>Nil</b>	<b>6.9</b>
53-54 . . . . .	Nil	Nil	Nil	(Nil)	(Nil)	(Nil)	<b>Nil</b>	<b>6.1</b>
54-55* . . . . .	4	1	Nil	Nil	Nil	Nil	<b>Nil</b>	
55-56 . . . . .	3	1	Nil	(Nil)	(Nil)	(Nil)	<b>Nil</b>	<b>7.1</b>
1956-57 . . . . .								
57-58* . . . . .					Nil	Nil		
58-59 . . . . .	1	Nil	Nil	Nil	Nil	Nil	<b>Nil</b>	<b>8.4</b>
59-60 . . . . .	2	Nil	Nil	Nil	Nil	Nil	<b>Nil</b>	<b>9.6</b>
60-61 . . . . .	Nil	Nil	Nil	Nil	Nil	Nil	<b>Nil</b>	<b>2.8</b>
<b>10 Years' Mean</b>	<b>3</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>6.4</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 13

River Karwa (Darna)

Site Pimpalgaon Dukra

Year	Mean discharge (Cusecs)						Volume ( June to Nov.) T. M. C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1909-10 . . .	65	772	377	289	135	6	4.4
10-11 . . .	86	558	1,334	664	648	55	8.8
1911-12 . . .	77	(123)	502	177	33	7	2.4
12-13 . . .	4	1,088	626	166	171	34	5.6
13-14 . . .	677	1,132	702	281	148	(14)	7.8
14-15 . . .	374	2,117	1,931	828	119	14	14.3
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .	122	678	302	93	43	(12)	3.2
1921-22 . . .							
22-23 . . .	177	589	449	97	34	36	3.8
23-24 . . .	7	269	499	296	18	5	2.8
24-25 . . .							
25-26 . . .							
9 Years' Mean	177	814	747	321	150	20	5.9
1946-47 . . .							
47-48 . . .	(48)	347	301	413	64	6	3.1
48-49 . . .	99	229	259	104	43	127	2.3
49-50 . . .	Nil	58	183	238	219	14	1.9
50-51 . . .	(48)	975	150	367	137	4	4.5
1951-52* . . .	1						
52-53 . . .	56	584	454	25	34	19	3.1
53-54* . . .	99			53	69	18	
54-55 . . .	9	703	277	1,310	43	13	6.1
55-56 . . .	1	203	524	569	254	29	4.2
1956-57 . . .	1	1,102	707	332	464	40	7.1
57-58 . . .	216	168	150	85	44	36	1.8
58-59 . . .	Nil	1,717	274	354	35	23	6.4
10 Years' Mean	48	609	328	380	134	31	4.0
19 Years' Mean	109	706	526	352	141	26	4.9

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 13

River **Karwa (Darna)**

Site **Pimpalgaon Dukra**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1909-10 . . .	4						Nil	4.4
10-11 . . .	5						Nil	8.8
1911-12 . . .	3						Nil	2.4
12-13 . . .	3						Nil	5.6
13-14 . . .	4						Nil	7.8
14-15 . . .	7						Nil	14.3
15-16* . . .								6.0
1916-17* . . .								6.9
17-18* . . .								3.6
18-19* . . .								0.8
19-20* . . .								4.2
20-21 . . .	(7)						Nil	3.2
1921-22* . . .								2.7
22-23 . . .	16						Nil	3.8
23-24 . . .	4						Nil	2.8
24-25* . . .								4.0
25-26* . . .								2.3
9 Years' Mean	6						Nil	5.9
1946-47 . . .								
47-48 . . .	5	4	3	3	2	Nil	Nil	3.1
48-49 . . .	(49)	1	1	Nil	Nil	Nil	0.1	2.4
49-50 . . .	15	13	4	1	1	Nil	Nil	1.9
50-51 . . .	4	5	5	2	1	Nil	Nil	4.5
1951-52 . . .								
52-53 . . .	28	21	13	9	(1)	(1)	0.2	3.3
53-54* . . .	10	8	6	4	2	4	Nil	
54-55 . . .	5	3	3	2	1	1	Nil	6.1
55-56 . . .	16	10	6	5	3	1	Nil	4.2
1956-57 . . .	19	9	3	2	2	1	0.1	7.2
57-58 . . .	9	3	2	1	1	2	Nil	1.8
58-59 . . .	6	(8)	(4)	(3)	(1)	(1)	Nil	6.4
10 Years' Mean	16	8	4	3	1	1	Nil	4.1
19 Years' Mean	11							

\*Not considered for calculating the average.

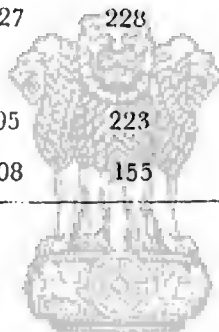
# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 14

River Wldevi (Darna)

Site Nasik Road

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C
	June	July	Aug	Sep.	Oct.	Nov.	
1955-56 . . . . .							
1956-57 . . . . .	10				66	49	
57-58 . . . . .	71	127	228	14	32	16	1.2
58-59 . . . . .				343	50	44	
59-60 . . . . .	55	395	223	203	70	28	2.6
60-61 . . . . .	10	308	155	197	10	5	1.7



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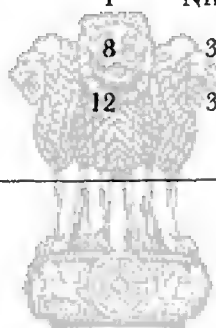
# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 14

River Waldevi (Darna)

Site Nasik Read

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	Dec. to May T.M.C.	Annual T.M.C.
1955-56 . . .		9	5	3	2	3		
1956-57 . . .	23	16	10	7	1	1	0.1	
57-58 . . .	5	2	1	Nil				
58-59 . . .	19	9	8	3	1	Nil	0.1	
59-60 . . .	23	17	12	3	2	1	0.1	2.7
60-61 . . .	2							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 15

River **Kadwa**

Site **Lakhamapur**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906 . . .							
07 . . .							
08 . . .							
09 . . .							
10 . . .							
1911 . . .							
12 . . .							
13 . . .							
14 . . .							
15 . . .							
1916 . . .							
17 . . .							
18 . . .							
19 . . .							
20 . . .							
1921 . . .							
1922-23* . . .							
23-24* . . .							
24-25* . . .							
25-26* . . .							
<b>20 Years' Mean</b>							

\*From 1st May to 30th April.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 15

River Kadwa

Site Lakhamapur

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	Dec. to May) T.M.C.	Annual T.M.C.
1906 . . .								4.7
07 . . .								10.0
08 . . .								8.4
09 . . .								10.4
10 . . .								7.5
1911 . . .								3.7
12 . . .								9.7
13 . . .								14.5
14 . . .								24.7
15 . . .								7.5
1916 . . .								8.0
17 . . .								7.7
18 . . .								3.0
19 . . .								9.7
20 . . .								2.5
1921 . . .								5.4
1922-23* . . .								6.9
23-24* . . .								8.2
24-25* . . .								7.1
25-26* . . .								4.2
20 Years' Mean								8.2

\*From 1st May to 30th April.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 15

River **Kadwa**

Site **Lakhamapur**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1948-49 . . .	(4)	1,181	407	244	22	42	<b>5.1</b>
49-50 . . .	5	49	662	1,278	354	8	<b>6.1</b>
50-51 . . .	1	1,431	145	72	72	66	<b>4.8</b>
1951-52 . . .	24	57	454	73	105	51	<b>2.1</b>
52-53 . . .	587	1,585	1,131	53	43	30	<b>9.0</b>
53-54 . . .	311	591	2,626	54	27	7	<b>9.6</b>
54-55 . . .	4	341	439	1,260	174	26	<b>6.0</b>
55-56 . . .	(4)	40	578	601	262	37	<b>4.0</b>
1956-57 . . .	3	1,604	2,267	725	523	36	<b>13.8</b>
57-58 . . .	11	110	(903)	71	17	5	<b>2.9</b>
58-59 . . .	3	2,334	287	1,924	116	19	<b>12.4</b>
59-60 . . .	78	1,283	942	480	281	47	<b>8.2</b>
60-61* . . .	2	62	580			3	
<b>12 Years' Mean</b>	<b>86</b>	<b>884</b>	<b>903</b>	<b>570</b>	<b>166</b>	<b>31</b>	<b>7.0</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 15

River **Kadwa**

Site **Lakhamapur**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1948-49 . . .	9	8	4	4	4	6	Nil	5.1
49-50 . . .	7	8	5	3	2	1	Nil	6.1
50-51 . . .	45	24	10	3	1	Nil	0.2	5.0
1951-52 . . .	27	(6)	(3)	(2)	(3)	(2)	0.1	2.2
52-53 . . .	20	1	1	2	1	1	0.1	9.1
53-54 . . .	4	3	2	2	1	1	Nil	9.6
54-55 . . .	12	9	4	3	3	3	Nil	6.0
55-56 . . .	8	5	3	3	2	1	Nil	4.0
1956-57 . . .	13	3	3	2	2	1	Nil	13.8
57-58 . . .	3	2	2	1	9	1	Nil	2.9
58-59 . . .	8	2	2	1	Nil	1	Nil	12.4
59-60 . . .	8	4	2	2	1	126	0.3	8.5
60-61* . . .	2	1	2	1	Nil	1	Nil	
12 Years' Mean	14	6	3	2	2	12	0.1	7.1

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 16

River Kadwa

Site Plakhed (Weir)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .							
07-08 . . .							
08-09 . . .							
09-10 . . .							
10-11 . . .							
1911-12 . . .							
12-13 . . .							
13-14 . . .							
14-15 . . .							
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .							
1921-22 . . .							
22-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
20 Years' Mean							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 16

iver Kadwa

Site Palkhed (Weir)

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .								11.7
07-08 . . .								36.4
08-09 . . .								20.2
09-10 . . .								15.7
10-11 . . .								19.7
1911-12 . . .								12.2
12-13 . . .								37.2
13-14 . . .								26.2
14-15 . . .								62.9
15-16 . . .								28.6
1916-17 . . .								22.9
17-18 . . .								36.9
18-19 . . .								10.5
19-20 . . .								38.3
20-21 . . .								7.3
1921-22 . . .								24.1
22-23 . . .								19.1
23-24 . . .								16.5
24-25 . . .								17.1
25-26 . . .								8.6
20 Years' Mean								23.6

Note : The figures for the years 1906-07 to 1919-20 are for five months, June to October and those for the years 1922-23 to 1925-26 are for twelve months from May to April. The position regarding the figures for 1920-21 and 1921-22 is not clear.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 16

River **Kadwa**

Site **Palkhed (Weir)**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T. M. C
	June	July	Aug.	Sep.	Oct	Nov.	
1941-42 . . .	Nil	1,055	126	10	Nil	7	3.1
42-43 . . .	Nil	1,044	1,531	293	54	7	7.8
43-44 . . .	Nil	619	619	686	460	25	6.5
44-45 . . .	7	4,754	3,697	851	232	54	25.5
45-46 . . .	342	3,897	2,146	2,167	221	30	23.3
1946-47 . . .	10	1,302	2,885	1,764	124	11	16.1
47-48 . . .	1	776	1,101	2,536	302	28	12.5
48-49 . . .	3	2,105	1,950	392	229	Nil	12.4
49-50 . . .	3	497	1,637	3,226	828	182	16.8
50-51 . . .	1	6,335	1,756	1,216	531	23	26.4
1951-52 . . .	41	241	1,080	271	291	49	5.2
52-53 . . .	123	2,027	1,135	278	50	16	9.5
53-54 . . .	5	1,061	4,199	545	165	9	15.8
54-55 . . .	4	1,221	1,245	4,814	799	35	21.3
55-56 . . .	6	384	2,075	2,204	1,387	32	16.1
1956-57 . . .	41	5,363	4,840	1,357	1,981	6	36.3
57-58 . . .	8	952	2,261	612	610	41	11.9
58-59 . . .	41	6,317	2,009	3,405	3,338	36	40.2
59-60 . . .	159	2,706	4,827	2,642	2,605	471	35.5
60-61 . . .	12	1,013	2,429	1,051	1,044	21	14.8
20 Years' Mean	40	2,183	2,177	1,516	763	54	17.9

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 16

River Kadwa

Site Palkhed (Weir)

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1941-42 . . .	Nil	Nil	1	Nil	Nil	Nil	Nil	3.1
42-43 . . .	31	1	Nil	Nil	Nil	Nil	0.1	7.9
43-44 . . .	17	1	Nil	Nil	2	Nil	Nil	6.5
44-45 . . .	12	3	2	Nil	Nil	2	Nil	25.5
45-46 . . .	16	6	6	Nil	Nil	Nil	Nil	23.3
1946-47 . . .	13	14	4	Nil	1	Nil	Nil	16.1
47-48 . . .	13	15	6	4	2	Nil	Nil	12.5
48-49 . . .	8	4	1	Nil	Nil	Nil	Nil	12.4
49-50 . . .	21	6	Nil	Nil	Nil	Nil	0.1	16.9
50-51 . . .	21	15	9	1	6	8	0.1	26.5
1951-52 . . .	22	20	17	6	2	3	0.2	5.4
52-53 . . .	9	12	3	2	3	7	Nil	9.5
53-54 . . .	11	8	3	1	6	5	Nil	15.8
54-55 . . .	11	9	5	8	4	3	Nil	21.3
55-56 . . .	30	10	9	14	(8)	9	0.1	16.2
1956-57 . . .	30	32	16	16	25	13	0.3	36.6
57-58 . . .	198	7	6	3	6	32	0.6	12.5
58-59 . . .	40	21	17	16	12	7	0.2	40.4
59-60 . . .	169	Nil	10	8	9	4.	0.5	36.0
60-61 . . .	12	13	3	1	Nil	5	Nil	14.8
20 Years' Mean	34	10	6	4	4	5	0.1	18.0

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 17

River Unanda (Kadwa)

Site Ozarkhed

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .							
07-08 . . .							
08-09 . . .							
09-10 . . .							
10-11 . . .							
1911-12 . . .							
12-13 . . .							
13-14 . . .							
14-15 . . .							
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .							
1921-22 . . .							
22-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
20 Years' Mean							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 17

River Unanda (Kadwa)

Site Ozarkhed

Year	Mean discharge (Cusces)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .								2.0
07-08 . . .								3.2
08-09 . . .								2.0
09-10 . . .								3.9
10-11 . . .								4.9
1911-12 . . .								1.7
12-13 . . .								3.0
13-14 . . .								3.2
14-15 . . .								17.7
15-16 . . .								3.2
1916-17 . . .								2.3
17-18 . . .								3.6
18-19 . . .								0.9
19-20 . . .								9.8
20-21 . . .								0.5
1921-22 . . .								1.7
22-23 . . .								2.2
23-24 . . .								4.4
24-25 . . .								4.1
25-26 . . .								2.8
20 Years' Mean								3.9

Note : The figures for the years 1906-07 to 1919-20 are for seven months, June to December. The figures for the years 1922-23 to 1925-26 are for twelve months from May to April. The position regarding the figures for 1920 and 1921 is not clear.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 17

River Unanda (Kadwa)

Site Ozarkhed

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1948-49 . . .	3	150	81	40	13	17	<b>0.7</b>
49-50 . . .	2	65	160	1,930	52	18	<b>5.7</b>
50-51 . . .	1	1,755	67	18	19	17	<b>5.0</b>
1951-52 . . .	12	235	397	45	45	(11)	<b>1.9</b>
52-53 . . .	137	1,239	397	53	17	4	<b>4.9</b>
53-54 . . .	1	144	1,507	107	23	3	<b>4.8</b>
54-55 . . .	259	136	177	692	239	11	<b>4.0</b>
55-56 . . .	1	14	257	746	220	16	<b>3.2</b>
1956-57 . . .							
57-58 . . .	36	53	260	83	9	4	<b>1.1</b>
58-59 . . .	2	1,383	133	855	38	11	<b>6.4</b>
59-60 . . .	73	325	924	468	84	19	<b>5.0</b>
60-61 . . .	1	33	118	55	8	2	<b>0.5</b>
<b>12 Years' Mean</b>	<b>44</b>	<b>461</b>	<b>373</b>	<b>424</b>	<b>64</b>	<b>11</b>	<b>3.6</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 17

River Unanda (Kadwa)

Site Ozarkhed

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1948-49 . . .	6	3	1	1	1	Nil	Nil	0.7
49-50 . . .	5	3	2	1	1	1	Nil	5.7
50-51 . . .	18	(2)	1	1	Nil	Nil	Nil	5.0
1951-52 . . .	(5)	(2)	(1)	(1)	(Nil)	(Nil)	Nil	1.9
52-53 . . .	2	1	1	Nil	Nil	Nil	Nil	4.9
53-54 . . .	2	2	1	Nil	Nil	Nil	Nil	4.8
54-55 . . .	5	3	2	1	Nil	Nil	Nil	4.0
55-56 . . .	5	(2)	(1)	(1)	(Nil)	(Nil)	Nil	3.2
1956-57* . . .		3	2	1	1	Nil		
57-58 . . .	2	1	Nil	Nil	Nil	Nil	Nil	1.1
58-59 . . .	4	2	1	Nil	Nil	Nil	Nil	6.4
59-60 . . .	6	3	1	1	Nil	Nil	Nil	5.0
60-61 . . .	2	Nil	Nil	Nil	Nil	1	Nil	0.5
12 Years' Mean	5	2	1	1	Nil	Nil	Nil	3.6

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 18

River **Kolwan (Kadwa)**

Site **Waghad**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1941-42 . . .	125	461	178	16	Nil	8	2.9
42-43 . . .	139	1,048	219	294	3	10	4.6
43-44 . . .	37	761	223	69	74	9	3.1
44-45 . . .	88	440	713	18	13	8	3.3
45-46 . . .	9	292	263	122	3	7	1.8
1946-47 . . .	6	535	423	164	Nil	13	2.9
47-48 . . .	4	196	416	411	7	6	2.7
48-49 . . .	46	403	301	29	6	34	2.2
49-50 . . .	Nil	117	258	423	17	7	2.1
50-51 . . .	Nil	1,066	395	263	63	8	4.9
1951-52 . . .	3	104	262	15	30	14	1.1
52-53 . . .	39	1,829	1,348	9	2	3	8.6
53-54 . . .	90	587	1,164	26	6	9	5.0
54-55 . . .	4	340	297	490	35	7	3.1
55-56 . . .	Nil	97	534	356	253	Nil	3.3
1956-57 . . .	Nil	248	132	99	187	13	1.9
57-58 . . .	Nil	118	229	26	4	7	1.0
58-59 . . .	2	828	268	304	16	17	3.7
59-60 . . .	23	562	540	288	35	11	3.8
60-61 . . .	17	15	362	66	Nil	(9)	1.2
20 Years' Mean	32	502	426	174	38	10	3.1

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 18

River **Kolwan (Kadwa)**

Site **Waghad**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1941-42 . . .	15	11	12	10	5	11	Nil	2.0
42-43 . . .	10	10	7	10	15	11	Nil	4.6
43-44 . . .	10	9	8	8	2	1	Nil	3.1
44-45 . . .	7	6	9	7	3	9	Nil	3.3
45-46 . . .	7	6	4	7	3	5	Nil	1.8
1946-47 . . .	9	6	7	11	7	5	Nil	2.9
47-48 . . .	9	8	10	6	1	2	Nil	2.7
48-49 . . .	7	15	11	12	5	4	Nil	2.2
49-50 . . .	4	2	5	8	5	Nil	Nil	2.1
50-51 . . .	5	1	4	2	5	Nil	Nil	4.9
1951-52 . . .	6	5	3	3	2	Nil	Nil	1.1
52-53 . . .	4	5	3	1	Nil	Nil	Nil	8.6
53-54 . . .	5	11	5	10	2	7	Nil	5.0
54-55 . . .	8	Nil	5	5	Nil	Nil	Nil	3.1
55-56 . . .	Nil	7	8	5	6	2	Nil	3.3
1956-57 . . .	10	(5)	(4)	(4)	(2)	(3)	Nil	1.9
57-58 . . .	4	4	Nil	Nil	Nil	2	Nil	1.0
58-59 . . .	6	5	4	3	Nil	3	Nil	3.7
59-60 . . .	6	5	5	5	6	7	Nil	3.8
60-61 . . .	6	7	7	Nil	(2)	6	Nil	1.2
20 Years' Mean	7	6	6	6	4	4	Nil	3.1

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL NO. 19

River **Odal (Kadwa)**

Site **Khadakozar**

Year	Mean discharge (Cusecs)						Volume ( June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .	71	23	89	43	6	3	<b>0.4</b>
07-08 . . .	6	9	144	20	3	1	<b>0.5</b>
08-09 . . .	8	5	36	19	1	Nil	<b>0.1</b>
09-10 . . .	729	12	57	106	35	6	<b>2.5</b>
10-11 . . .	16	47	131	69	414	43	<b>1.9</b>
1911-12 . . .	173	26	66	34	9	87	<b>1.0</b>
12-13 . . .	21	286	203	21	18	43	<b>1.6</b>
13-14 . . .	43	81	46	21	5	2	<b>0.5</b>
14-15 . . .	101	698	281	251	117	103	<b>4.3</b>
15-16 . . .	158	283	328	311	248	16	<b>3.6</b>
<b>10 Years' Mean</b>	<b>127</b>	<b>147</b>	<b>138</b>	<b>90</b>	<b>86</b>	<b>30</b>	<b>1.6</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 19

River Odal (Kadwa)

Site Khadakozar

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .	1	1	(Nil)	(Nil)	Nil	Nil	Nil	0.4
07-08 . . .	1	Nil	Nil	Nil	(Nil)	(Nil)	Nil	0.5
08-09 . . .	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	Nil	0.1
09-10 . . .	1	1	Nil	Nil	Nil	.44	0.1	2.6
10-11 . . .	3	2	1	1	1	Nil	Nil	1.9
1911-12 . . .	4	1	1	Nil	(Nil)	10	Nil	1.0
12-13 . . .	6	1	(Nil)	(Nil)	(Nil)	1	Nil	1.6
13-14 . . .	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	6	Nil	0.5
14-15 . . .	29	1	1	Nil	(Nil)	(Nil)	0.1	4.4
15-16 . . .	1	(Nil)	(Nil)	(Nil)	(Nil)	(Nil)	Nil	3.6
10 Years' Mean	5	1	Nil	Nil	Nil	6	Nil	1.7

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 19

River Odal (Kadwa)

Site Khadakozar

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1917 . . .							
18 . . .							
19 . . .							
20 . . .							
1921 . . .							
1922-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
9 Years' Mean							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 19

River Odal (Kadwa)

Site Khadakojar

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	Dec. to May T.M.C.	Annual T.M.C.
1917 . . .								1.0
18 . . .								0.3
19 . . .								2.3
20 . . .								0.2
1921 . . .								1.0
1922-23 . . .								0.1
23-24 . . .								0.6
24-25 . . .								0.9
25-26 . . .								0.2
<b>9 Years' Mean</b>								<b>0.7</b>

Note;—The figures for the years 1917 to 1919 are for ten months, January to March and June to December. The figures for the years 1922-23 to 1925-26 are for twelve months from May to April. The position regarding the figures for 1920 and 1921 is not clear.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLO

SERIAL No. 20

River Pravara

Site Arther Hill (Bhandardhara)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1946-47 . . .							
47-48 . . .	20	2,138	1,906	1,649	335	25	<b>16.2</b>
48-49 . . .	277	2,439	1,654	708	168	115	<b>14.1</b>
49-50 . . .	243	2,515	2,434	1,481	320	33	<b>18.6</b>
50-51 . . .	99	4,544	105	1,253	187	70	<b>16.7</b>
1951-52 . . .	369	2,155	2,844	197	295	48	<b>15.8</b>
52-53 . . .	920	4,294	2,164	226	137	45	<b>20.8</b>
53-54 . . .	1,029	1,747	4,413	490	223	44	<b>21.2</b>
54-55 . . .	270	2,729	1,918	2,754	420	71	<b>21.5</b>
55-56 . . .	385	1,694	2,368	2,024	796	14	<b>19.1</b>
1956-57 . . .	360	4,955	3,589	1,322	663	14	<b>29.0</b>
57-58 . . .	771	2,394	1,779	446	54	28	<b>14.6</b>
58-59 . . .	117	4,171	1,433	1,227	53	64	<b>18.8</b>
59-60 . . .	122	4,525	714	1,500	Nil	33	<b>18.3</b>
60-61 . . .	332	2,047	2,346	123	Nil	34	<b>13.1</b>
<b>14 Years' Mean</b>	<b>380</b>	<b>3,025</b>	<b>2,119</b>	<b>1,100</b>	<b>261</b>	<b>46</b>	<b>18.4</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 20

River Pravara

Site Arther Hill (Bhandardhara)

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1946-47*		10	16	11	69	32		
47-48	18	31	15	23	36	24	0.4	16.6
48-49	13	47	15	37	73	68	0.6	14.7
49-50	35	17	32	50	31	23	0.5	19.1
50-51	23	27	25	31	24	5	0.5	17.2
1951-52	58	76	32	28	62	17	0.8	16.6
52-53	25	18	26	16	17	20	0.3	21.1
53-54	30	28	17	65	24	16	0.5	21.7
54-55	67	24	36	3	9	3	0.4	21.9
55-56	14	13	4	7	8	10	Nil	19.1
1956-57	22	18	12	6	11	21	0.2	29.2
57-58	7	25	8	14	24	7	0.2	14.8
58-59	49	7	41	18	13	4	0.2	19.0
59-60	76	26	45	58	72	46	0.9	19.2
60-61	90	44	35	98	103	92	1.2	14.3
14 Years' Mean	38	29	24	32	36	25	0.5	18.9

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL

SERIAL No. 21

River Pravara

Site Ozer

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .							
07-08 . . .							
08-09 . . .							
09-10 . . .							
10-11 . . .							
1911-12 . . .							
12-13 . . .							
13-14 . . .							
14-15 . . .							
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .							
1921-22 . . .							
22-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
20 Years' Mean							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 21

River **Pravara**

Site **Ozer**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .								26.1
07-08 . . .								27.4
08-09 . . .								38.8
09-10 . . .								36.0
10-11 . . .								33.6
1911-12 . . .								17.7
12-13 . . .								26.9
13-14 . . .								29.8
14-15 . . .								47.1
15-16 . . .								28.0
1916-17 . . .								41.0
17-18 . . .								48.4
18-19 . . .								13.7
19-20 . . .								40.5
20-21 . . .								30.6
1921-22 . . .								19.4
22-23 . . .								1.2
23-24 . . .								31.4
24-25 . . .								29.9
25-26 . . .								25.6
20 Years' Mean								29.7

Note: The figures for the years 1906-07 to 1919-20 are for five months, June to October. The figures for the years 1922-23 to 1925-26 are for twelve months from May to April. The position regarding the figures for 1920 and 1921 is not clear

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 21

River **Pravara**

Site **Ozer**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1941-42 . . .	538	3,653	3,069	648	638	71	23.0
42-43 . . .	358	3,290	2,298	1,741	653	173	22.5
43-44 . . .	467	2,769	2,272	1,352	1,604	125	22.8
44-45 . . .	541	5,917	4,317	1,180	620	238	34.2
45-46 . . .	403	2,688	2,509	1,416	600	122	20.5
1946-47 . . .	419	2,054	5,448	2,022	807	2,033	33.9
47-48 . . .	376	1,319	1,692	2,928	887	138	19.4
48-49 . . .	384	332	340	415	(857)	(376)	7.2
49-50 . . .	610	907	2,039	2,415	1,066	(376)	19.7
50-51 . . .	309	3,054	1,984	1,866	835	108	21.6
1951-52 . . .	495	912	1,808	633	893	160	12.9
52-53 . . .	586	2,926	2,891	646	713	511	21.9
53-54 . . .	557	792	4,248	708	784	507	20.1
54-55 . . .	411	1,273	1,056	2,727	783	714	18.4
55-56 . . .	407	787	993	2,428	1,274	380	16.6
1956-57 . . .	542	3,155	3,753	1,228	1,788	121	28.3
57-58 . . .	1,686	1,371	2,123	937	654	448	19.2
58-59 . . .	492	3,080	2,465	2,172	480	596	24.5
59-60 . . .	454	2,446	3,663	2,449	808	473	27.3
60-61 . . .	448	823	1,988	1,400	578	632	15.4
20 Years' Mean	524	2,177	2,548	1,566	866	415	21.5

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 21

River Pravara

Site Ozer

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1941-42 . . .	42	35	38	34	106	(69)	0.9	23.9
42-43 . . .	118	59	Nil	Nil	52	90	0.8	23.3
43-44 . . .	71	87	25	54	45	47	0.8	23.6
44-45 . . .	122	140	57	46	39	44	1.1	35.3
45-46 . . .	43	73	39	28	67	229	1.3	21.8
1946-47 . . .	258	222	56	35	145	32	2.0	35.9
47-48 . . .	80	144	55	64	32	23	1.1	20.5
48-49 . . .	(107)	(93)	(52)	(33)	(62)	(69)	(1.1)	8.3
49-50 . . .	(107)	34	64	26	48	54	0.9	20.6
50-51 . . .	120	43	133	9	26	35	0.9	22.5
1951-52 . . .	91	520	386	343	687	444	6.5	19.4
52-53 . . .	445	398	(428)	(417)	379	706	7.3	29.2
53-54 . . .	509	269	366	385	463	477	6.5	26.6
54-55 . . .	483	365	429	317	411	382	6.2	24.6
55-56 . . .	395	480	451	481	544	444	7.4	24.0
1956-57 . . .	240	336	375	420	484	663	6.6	34.9
57-58 . . .	480	326	312	378	425	358	6.1	25.3
58-59 . . .	499	319	589	403	474	410	7.0	31.5
59-60 . . .	682	475	548	448	686	505	8.9	36.2
60-61 . . .	544	444	396	581	656	550	8.5	23.9
20 Years' Mean	272	243	240	225	292	282	4.1	25.6

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 22

River Pravara

Site Newasa

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1949-50 . . .							
50-51 . . .							
1951-52 . . .							
52-53 . . .							
53-54 . . .							
54-55 . . .	938	4,249	2,621	6,946	1,271	165	<b>42.6</b>
55-56 . . .	270	2,250	3,594	7,101	3,164	185	<b>43.7</b>
1956-57 . . .	574	9,026	10,248	4,706	6,933	1,536	<b>87.9</b>
57-58 . . .	2,232	3,511	4,474	5,655	2,566	430	<b>49.9</b>
58-59 . . .	1,215	17,845	11,753	11,300	5,005	1,834	<b>129.9</b>
59-60 . . .	2,069	13,803	15,990	13,797	5,601	2,419	<b>142.3</b>
60-61* . . .	2,111	6,686	11,162	13,044	4,523	202	<b>99.7</b>
6 Years' Mean	<b>1,216</b>	<b>8,447</b>	<b>8,113</b>	<b>8,251</b>	<b>4,093</b>	<b>1,095</b>	<b>82.7</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 22

River Pravara

Site Newasa

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1949-50* . . .						89	65	
50-51* . . .				74	64			
1951-52* . . .		141	114	74	69			
52-53* . . .								
53-54* . . .		49	42	41	26	47		
54-55 . . .	168	117	67	57	45	36	1.3	43.9
55-56 . . .	264	216	148	105	91	358	3.2	46.9
1956-57 . . .	467	264	197	143	131	141	3.6	91.5
57-58 . . .	135	131	72	44	37	65	1.4	51.3
58-59 . . .	1,397	118	100	62	65	132	5.0	134.9
59-60 . . .	165	125	113	65	36	228	1.9	144.2
60-61* . . .	131							
6 Years' Mean	433	162	116	79	68	160	2.7	85.4

\*Not considered for Calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 23

River Mula (Pravara)

Site Chikalthan

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1906-07 . . .							
07-08 . . .							
08-09 . . .							
09-10 . . .							
10-11 . . .							
1911-12 . . .							
12-13 . . .							
13-14 . . .							
14-15 . . .							
15-16 . . .							
1916-17 . . .							
17-18 . . .							
18-19 . . .							
19-20 . . .							
20-21 . . .							
1921-22 . . .							
22-23 . . .							
23-24 . . .							
24-25 . . .							
25-26 . . .							
20 Years' Mean							



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 23

River **Mula (Pravara)**

Site **Chikalthan**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1906-07 . . .								28.5
07-08 . . .								39.6
08-09 . . .								40.2
09-10 . . .								34.2
10-11 . . .								55.0
1911-12 . . .								28.0
12-13 . . .								45.5
13-14 . . .								56.4
14-15 . . .								70.0
15-16 . . .								47.4
1916-17 . . .								49.6
17-18 . . .								30.2
18-19 . . .								9.4
19-20 . . .								35.1
20-21 . . .								17.3
1921-22 . . .								24.1
22-23 . . .								28.4
23-24 . . .								27.9
24-25 . . .								31.1
25-26 . . .								21.2
20 Years' Mean								36.0

*Note*—The figures for the years 1906-07 to 1919-20 are for seven months, June to December. The figures for the years 1922-23 to 1925-26 are for twelve months from May to April. The position regarding figures for 1920-21 and 1921-22 is not clear.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 23

River Mula (Pravara)

Site Chikalthan

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T. M. C
	June	July	Aug.	Sep.	Oct.	Nov.	
1945-46* . . .			3,150	1,182	316	178	
1946-47 . . .	461	6,841	7,134	1,910	326	3,009	52.3
47-48 . . .	10	3,884	4,040	6,147	1,509	115	41.4
48-49 . . .	96	2,770	1,783	614	148	992	17.0
49-50 . . .	113	2,288	3,496	2,621	1,378	182	26.8
50-51 . . .	37	7,560	2,321	1,935	881	72	34.1
1951-52 . . .	439	3,034	4,180	335	1,673	294	26.6
52-53 . . .	911	6,769	3,786	258	204	74	32.0
53-54 . . .	706	1,638	4,510	220	523	35	20.4
54-55* . . .					130	51	
55-56 . . .	284	1,492	2,016	3,492	1,146	107	22.6
1956-57 . . .	106	4,417	4,047	981	2,142	578	32.6
57-58 . . .	584	2,801	2,487	1,130	85	40	18.9
58-59* . . .				2,737	303	207	
59-60 . . .	349	6,967	3,610	3,791	925	301	42.4
60-61 . . .	322	2,424	3,682	1,865	647	52	23.8
13 Years' Mean	340	4,068	3,622	1,946	891	450	30.1

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 23

River **Mula (Pravara)**

Site **Chikalthan**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1945-46* . . .	105	8	4	2	1	2	0.3	
1946-47 . . .	771	86	52	34	25	13	2.6	54.9
47-48 . . .	46	46	35	21	15	10	0.4	41.8
48-49 . . .	130	60	38	22	12	26	0.8	17.8
49-50 . . .	64	37	29	21	14	131	0.9	27.7
50-51 . . .	37	24	15	11	7	78	0.4	34.5
1951-52 . . .	89	42	27	22	13	10	0.5	27.1
52-53 . . .	38	21	14	11	6	3	0.2	32.2
53-54 . . .	14	11	5	(18)	2	9	Nil	20.4
54-55* . . .	28	22	13	8	5	4	0.2	
55-56 . . .	86	38	22	15	9	175	0.9	23.5
1956-57 . . .	172	72	42	33	22	34	1.1	33.7
57-58 . . .	22	16	10	7	(11)	(48)	0.2	19.1
58-59* . . .	51	22	16	11	22	36	0.4	
59-60 . . .	65	32	19	13	6	6	0.3	42.7
60-61 . . .	22	12	8	5	3	87	0.3	24.1
13 Years' Mean	120	38	24	18	11	48	0.7	30.7

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 24

River Shiv (Pravara)

Site Khadak Wagulgaon

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1958-59*					797		
59-60	784	173	95	526	736	175	6.7
60-61	221	161	107	276	243	14	2.7
2 Years' Mean	502	167	101	401	490	94	4.7

SERIAL No. 25

River Purna

Site Sidheshwar

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1957-58							
58-59	2,192	4,245	18,461	18,115	1,591	1,581	121.9
59-60	727	4,611	2,779	20,857	6,433	1,417	96.7
60-61	5,324	3,093	3,389	1,831	1,529	158	40.4
3 Years' Mean	2,748	3,983	8,210	13,601	3,184	1,052	86.3

SERIAL No. 26

River Purna

Site Railway Bridge

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1957-58							
58-59	1,195	6,581	36,237	29,128	5,025	2,564	213.4
59-60	894	4,593	3,799	26,459	10,957	1,980	127.8
60-61	1,165	(5,587)	28,046	4,619	3,629	1,468	118.6
3 Years' Mean	1,085	5,587	22,694	20,069	6,537	2,004	153.3

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 24

River Shiv (Pravara)

Site Khadak Wagulgaon

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1958-59* . . .	220	58	39	20	9	6	1.0	
59-60 . . .	63	35	21	13	6	7	0.4	7.1
60-61 . . .	6	4	2	Nil	Nil	Nil	Nil	2.7
2 Years' Mean	34	20	12	6	3	4	0.2	4.9

SERIAL No. 25

River Purna

Site Sidheshwar

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1957-58* . . .		161	45	18	19	26		
58-59 . . .	703	388	220	80	Nil	Nil	3.6	125.5
59-60 . . .	743	Nil	Nil	Nil	Nil	Nil	2.0	98.7
60-61 . . .	60	44	27	9	2	18	0.4	40.8
3 Years' Mean	502	144	82	30	1	6	2.0	88.3

SERIAL No. 26

River Purna

Site Railway Bridge

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1957-58* . . .			189	116	94	62		
58-59 . . .	1,267	344	183	92	51	21	5.1	218.5
59-60 . . .	663	617	292	163	75	35	4.9	132.7
60-61 . . .	308	207	164	106	14	40	2.2	120.8
3 Years' Mean	746	389	213	120	47	32	4.1	157.3

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 27

River Manjra

Site Ghanpur anicut

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1951-52 . . .	8,996	12,969	6,159	6,867	6,160	1,774	<b>113.4</b>
52-53 . . .	993	3,563	1,423	6,030	4,134	707	<b>44.4</b>
53-54 . . .	5,881	4,823	5,797	19,728	18,521	2,058	<b>149.6</b>
54-55 . . .	1,677	7,594	13,000	17,800	31,136	1,622	<b>193.1</b>
55-56 . . .	8,924	11,544	95,292	29,523	10,682	2,012	<b>419.5</b>
1956-57 . . .	2,536	48,616	28,662	16,164	10,874	18,689	<b>333.0</b>
57-58 . . .	2,964	3,690	36,002	11,610	9,963	3,793	<b>180.6</b>
58-59 . . .	274	8,124	34,606	29,211	9,063	3,376	<b>224.0</b>
59-60 . . .	6,241	4,719	16,323	14,343	23,155	4,704	<b>183.9</b>
60-61 . . .	6,907	4,150	3,002	7,453	6,107	2,754	<b>79.8</b>
<b>10 Years' Mean</b>	<b>4,539</b>	<b>10,979</b>	<b>24,027</b>	<b>15,873</b>	<b>12,980</b>	<b>4,149</b>	<b>192.1</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 27

River **Manjra**

Site **Ghanpur anicut**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1951-52 . . .	1,312	1,154	90	256	52	295	8.4	121.8
52-53 . . .	847	639	98	51	19	7	4.3	48.7
53-54 . . .	734	752	367	192	113	17	5.7	155.3
54-55 . . .	123	960	503	256	78	Nil	5.0	198.1
55-56 . . .	367	282	253	143	64	694	4.9	424.4
1956-57 . . .	3,533	2,117	1,111	737	1,737	178	24.9	357.9
57-58 . . .	2,521	1,420	986	718	669	443	17.8	198.4
58-59 . . .	3,048	2,205	1,686	414	45	6	19.4	243.4
59-60 . . .	3,129	2,267	1,710	1,554	230	274	24.3	208.2
60-61 . . .	1,676	776	528	228	27	413	9.7	89.5
<b>10 Years' Mean</b>	<b>1,729</b>	<b>1,257</b>	<b>733</b>	<b>455</b>	<b>303</b>	<b>233</b>	<b>12.4</b>	<b>204.6</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 28

River **Manjra**

Site **Nizamnagar**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1934-35* . . .				16,321	4,543	3,863	
35-36 . . .	5,641	4,874	5,861	32,184	6,565	2,858	151.8
1936-37 . . .	1,193	2,148	3,300	4,399	3,064	3,548	46.5
37-38 . . .	1,490	7,266	1,389	4,389	5,278	1,231	55.8
38-39 . . .	20,666	16,655	25,422	28,397	13,044	1,374	278.4
39-40 . . .	981	2,565	1,738	2,489	869	355	23.8
40-41 . . .	1,869	1,318	11,792	4,286	5,652	722	68.0
1941-42 . . .	111	168	905	9,043	866	324	29.6
42-43 . . .	5,984	2,473	10,382	12,886	903	508	87.0
43-44 . . .	4,275	3,371	817	35,373	16,101	2,010	162.3
44-45 . . .	831	5,395	1,707	6,559	2,463	5,579	59.3
45-46 . . .	1,239	7,574	11,755	15,778	5,058	1,280	112.7
1946-47 . . .	3,975	2,237	4,529	9,750	1,309	948	59.7
47-48 . . .	1,510	3,283	19,399	22,435	18,361	1,587	176.2
48-49 . . .	1,850	5,911	10,909	34,950	15,922	17,057	227.2
49-50 . . .	3,620	12,640	5,250	44,435	12,709	2,234	212.4
50-51 . . .	628	1,699	1,346	31,968	4,733	1,365	108.9
1951-52 . . .	7,789	11,492	7,417	7,276	6,504	1,037	109.9
52-53 . . .	1,002	5,032	2,040	6,215	4,503	769	51.8
53-54 . . .	7,290	4,325	6,021	14,530	17,671	2,131	137.1
54-55 . . .	1,691	7,904	13,826	20,595	31,903	1,636	205.6
55-56 . . .	10,676	8,990	90,705	29,884	11,061	3,161	410.0
1956-57 . . .	2,252	43,819	35,555	17,475	10,122	16,903	334.6
57-58 . . .	2,645	3,812	34,146	9,637	9,162	2,131	163.6
58-59 . . .	215	14,236	32,151	29,635	5,348	2,016	221.1
59-60 . . .	7,806	5,565	19,394	13,327	20,940	2,095	183.0
60-61 . . .	4,239	4,330	1,358	5,769	4,367	1,070	55.7
26 Years' Mean	3,903	7,272	13,812	17,449	9,018	2,920	143.5

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 28

River **Manjra**

Site **Nizamsagar**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1934-35* . . .	640	519	97	123	271	90	4.5	
35-36 . . .	634	625	766	339	752	55	8.3	160.1
1936-37 . . .	448	306	320	506	1,596	211	8.9	55.4
37-38 . . .	592	805	767	1,025	1,040	672	12.9	68.7
38-39 . . .	1,076	1,471	1,179	759	781	915	16.1	294.5
39-40 . . .	248	102	49	284	71	42	2.2	26.0
40-41 . . .	369	247	157	433	234	39	4.0	72.0
1941-42 . . .	229	323	191	179	209	143	3.4	33.0
42-43 . . .	1,040	452	334	229	248	938	8.5	95.5
43-44 . . .	909	662	534	988	343	117	9.3	171.6
44-45 . . .	771	542	323	143	61	84	5.2	64.5
45-46 . . .	794	633	526	373	274	243	7.5	120.2
1946-47 . . .	425	589	350	481	239	129	5.7	65.4
47-48 . . .	1,011	775	443	347	253	452	8.7	184.9
48-49 . . .	4,004	1,382	951	460	327	234	19.3	246.5
49-50 . . .	1,227	876	387	292	217	67	8.1	220.5
50-51 . . .	683	486	297	213	102	100	5.0	113.9
1951-52 . . .	548	386	367	229	126	82	4.5	114.4
52-53 . . .	503	353	201	198	200	53	3.8	55.6
53-54 . . .	1,198	686	510	267	103	51	7.3	144.4
54-55 . . .	1,017	751	397	198	27	100	6.6	212.2
55-56 . . .	1,442	791	541	218	23	163	8.5	418.5
1956-57 . . .	2,902	1,179	665	440	799	49	16.0	350.6
57-58 . . .	1,001	375	96	Nil	Nil	42	4.0	167.6
58-59 . . .	1,050	444	158	30	Nil	Nil	4.5	225.6
59-60 . . .	1,384	525	198	30	Nil	Nil	5.7	188.7
60-61 . . .	397	208	43	9	Nil	52	1.9	57.6
26 Years' Mean	996	614	413	333	309	194	7.5	151.1

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 29

River **Alair (Manjra)**

Site **Pocharam**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1948-49 . . .	20	404	1,479	2,410	501	139	<b>13.1</b>
49-50 . . .	50	447	396	2,033	637	29	<b>9.5</b>
50-51 . . .	5	45	61	2,857	16	5	<b>7.7</b>
1951-52 . . .	54	492	680	61	128	23	<b>3.8</b>
52-53 . . .	Nil	211	240	140	108	35	<b>2.0</b>
53-54 . . .	Nil	298	228	280	162	45	<b>2.6</b>
54-55 . . .	11	509	891	410	389	18	<b>5.9</b>
55-56 . . .	22	364	2,343	1,241	131	38	<b>11.1</b>
1956-57 . . .	53	2,972	1,223	1,584	245	389	<b>17.2</b>
57-58 . . .	29	141	2,353	177	50	Nil	<b>7.4</b>
58-59 . . .	22	1,391	3,887	547	140	22	<b>16.1</b>
59-60 . . .	44	1,503	3,101	1,665	130	44	<b>17.1</b>
60-61 . . .	164	404	192	450	229	46	<b>3.9</b>
<b>13 Years' Mean</b>	<b>36</b>	<b>706</b>	<b>1,313</b>	<b>1,066</b>	<b>220</b>	<b>64</b>	<b>9.0</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 29

River **Alair (Manjra)**

Site **Pocharam**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1948-49 . . .	15	43	5	3	Nil	Nil	0.1	13.2
49-50 . . .	1	20	10	Nil	Nil	Nil	0.1	9.6
50-51 . . .	4	16	Nil	Nil	Nil	15	Nil	7.7
1951-52 . . .	Nil	Nil	Nil	1	Nil	Nil	Nil	3.8
52-53 . . .	4	Nil	Nil	Nil	Nil	Nil	Nil	2.0
53-54 . . .	8	21	33	2	Nil	Nil	0.2	2.8
54-55 . . .	9	22	3	Nil	Nil	Nil	0.1	6.0
55-56 . . .	24	3	Nil	Nil	Nil	Nil	0.1	11.2
1956-57 . . .	27	18	Nil	3	9	Nil	0.1	17.3
57-58 . . .	Nil	Nil	Nil	Nil	18	7	Nil	7.4
58-59 . . .	28	18	Nil	Nil	Nil	Nil	0.1	16.2
59-60 . . .	16	Nil	Nil	Nil	Nil	Nil	Nil	17.1
60-61 . . .	36	Nil	Nil	Nil	Nil	4	0.1	4.0
13 Years' Mean	13	12	4	1	2	2	0.1	9.1

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 30

River Manor			Site Manair						
Year	Mean discharge (Cusecs)						Volume (June to Nov.) T. M. C.		
	June	July	Aug.	Sep.	Oct	Nov.			
1951-52 . . .	56	319	249	152	505	15	3.5		
52-53 . . .	9	116	242	199	112	Nil	1.7		
53-54 . . .	94	337	966	1,045	3,064	53	14.7		
54-55 . . .	Nil	74	297	1,307	164	13	4.8		
55-56 . . .	129	98	884	2,156	456	232	10.4		
1956-57 . . .	42	1,931	2,065	2,919	963	10,381	47.9		
57-58 . . .	131	40	1,201	316	181	20	5.0		
58-59 . . .	1	273	3,047	1,126	124	24	12.2		
59-60 . . .	(58)	(376)	4,525	3,241	611	32	23.3		
60-61 . . .	57	192	82	652	361	25	3.6		
10 Years' Mean	58	376	1,356	1,311	654	1,080	12.7		

SERIAL No. 31


River Siddepetvagu (Maner)				Site Sanigram			
Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1953-54 . . .	114	20	175	965	2,752	845	13.0
54-55 . . .	5	8	33	97	69	Nil	0.6
55-56 . . .	6	22	33	109	79	41	0.8
1956-57 . . .	31	1,043	216	89	96	32	3.8
57-58 . . .	9	7	159	131	138	105	1.4
58-59 . . .	6	395	378	580	393	97	5.0
59-60 . . .	7	117	391	586	586	61	4.6
60-61 . . .	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8 Years' Mean	22	202	173	320	514	148	3.6

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 30

River Maner		Site Manair							
Year	Mean discharge (Cusecs)						Volume		
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May)	Annual	
							T.M.C.	T.M.C.	
1951-52 . . . . .	11	Nil	Nil	Nil	Nil	23	0.1	3.6	
52-53 . . . . .	40	Nil	Nil	Nil	Nil	Nil	0.1	1.8	
53-54 . . . . .	29	Nil	Nil	Nil	Nil	Nil	0.1	14.8	
54-55 . . . . .	9	2	Nil	Nil	Nil	Nil	Nil	4.8	
55-56 . . . . .	22	6	Nil	Nil	Nil	16	0.1	10.5	
1956-57 . . . . .	18	9	6	12	15	21	0.1	48.0	
57-58 . . . . .	2	Nil	Nil	Nil	5	11	Nil	5.0	
58-59 . . . . .	16	12	4	(Nil)	(Nil)	(Nil)	Nil	12.2	
59-60 . . . . .	6	14	2	(Nil)	(Nil)	(Nil)	Nil	23.3	
60-61 . . . . .	12	Nil	Nil	Nil	Nil	9	Nil	3.6	
10 Years' Mean	16	4	1	1	2	8	0.1	12.8	

SERIAL No. 31

River Siddepetvagu (Maner)								Site	Sanigram
Year	Mean discharge (Cusecs)							Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May)	Annual	
							T.M.C.	T.M.C.	
1933-34 . . . . .	Nil	Nil	Nil	Nil	Nil	Nil	Nil	13.0	
54-55 . . . . .	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.6	
55-56 . . . . .	5	Nil	Nil	Nil	Nil	Nil	Nil	0.8	
1956-57 . . . . .	3	Nil	Nil	Nil	Nil	Nil	Nil	3.8	
57-58 . . . . .	3	Nil	Nil	Nil	Nil	Nil	Nil	1.4	
58-59 . . . . .	Nil	Nil	Nil	Nil	Nil	Nil	Nil	5.0	
59-60 . . . . .	Nil	Nil	Nil	Nil	Nil	4	Nil	4.6	
60-61 . . . . .	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	
8 Years' Mean	1	Nil	Nil	Nil	Nil	1	Nil	3.6	

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 32

River Moruvanchavagu (Maner)

Site Ramappa Lake

Year	Mean discharge (Cusecs)						Volume ( June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1955-56 . . . . .							
1956-57 . . . . .	26	299	237	82	173	Nil	2.2
57-58 . . . . .	Nil	12	198	Nil	10	6	0.5
58-59 . . . . .	3	562	120	90	52	Nil	2.1
59-60 . . . . .	36	710	1,252	207	Nil	Nil	5.9
60-61 . . . . .	245	77	39	36	14	Nil	1.0
5 Years' Mean	62	332	369	83	50	1	2.3

SERIAL No. 33

River Moruvanchavagu (Maner)

Site Ghanpur Cheroo

Year	Mean discharge (Cusecs)						Volume ( June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1955-56 . . . . .							
1956-57 . . . . .	43	313	74	64	39	Nil	1.4
57-58 . . . . .	Nil	20	56	41	15	Nil	0.3
58-59 . . . . .	3	91	89	85	26	Nil	0.7
59-60 . . . . .	26	450	604	344	30	Nil	3.9
60-61 . . . . .	64	54	34	42	10	Nil	0.5
5 Years' Mean	27	186	171	115	24	Nil	1.4

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 32

River Moruvanchavagu (Maner)

Site Ramappa Lake

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1955-56*		4	15	23	20	8		
1956-57	Nil	Nil	Nil	Nil	Nil	Nil	Nil	2.2
57-58	Nil	Nil	Nil	2	Nil	Nil	Nil	0.5
58-59	Nil	Nil	Nil	Nil	Nil	Nil	Nil	2.1
59-60	Nil	Nil	Nil	Nil	Nil	Nil	Nil	5.9
60-61	Nil	Nil	Nil	Nil	Nil	3	Nil	1.0
5 Years' Mean	Nil	Nil	Nil	Nil	Nil	1	Nil	2.3

SERIAL No. 33

River Moruvanchavagu (Maner)

Site Ghanpur Cheroo

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1955-56*		Nil	Nil	Nil	Nil	Nil		
1956-57	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1.4
57-58	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.3
58-59	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.7
59-60	Nil	Nil	Nil	Nil	Nil	Nil	Nil	3.9
60-61	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.5
5 Years' Mean	Nil	Nil	Nil	Nil	Nil	Nil	Nil	4.1

\*Not Considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No 34

River **Pranhita**

Site **Jafferabad**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1957-58 . . . . .					10,992	4,682	
58-59 . . . . .	1,402	117,459	174,745	244,661	64,975	13,742	<b>1,630.0</b>
59-60 . . . . .	8,618	201,520	285,180	456,811	76,623	17,441	<b>2,760.4</b>

SERIAL No. 35

River **Wardha (Pranhita)**

Site **Majri**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1955-56* . . . . .			31,616	31,233	17,438	2,153	
1956-57 . . . . .	7,343	17,618	10,162	9,045	3,282	1,896	<b>130.5</b>
57-58 . . . . .	1,903	3,839	24,892	17,567	1,804	652	<b>133.9</b>
58-59 . . . . .	1,138	12,975	19,486	26,362	4,709	1,863	<b>175.6</b>
59-60 . . . . .	4,014	33,099	25,410	61,608	8,634	1,831	<b>354.7</b>
60-61 . . . . .	2,838	15,023	15,596	6,962	6,699	1,130	<b>128.2</b>
5 Years' Mean	<b>3,447</b>	<b>16,511</b>	<b>19,109</b>	<b>24,309</b>	<b>5,026</b>	<b>1,474</b>	<b>184.6</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 34

River **Pranhita**

Site **Jafferabad**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1957-58 . . .	1,890	1,152	931	637	461	292	<b>14.2</b>	
58-59 . . .	8,193	2,944	2,202	1,068	605	316	<b>40.4</b>	<b>1,670.4</b>
59-60 . . .	7,641							

SERIAL No. 35

River **Wardha (Pranhita)**

Site **Majri**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1955-56* . . .	1,090	607	307	137	50	47	<b>5.9</b>	
1956-57 . . .	512	239	161	421	814	51	<b>5.7</b>	<b>136.2</b>
57-58 . . .	320	200	122	65	29	14	<b>2.0</b>	<b>135.9</b>
58-59 . . .	831	382	223	74	26	10	<b>4.0</b>	<b>179.6</b>
59-60 . . .	993	(289)	(179)	(160)	156	91	<b>4.9</b>	<b>359.6</b>
60-61 . . .	617	334	217	70	38	17	<b>3.4</b>	<b>131.6</b>
5 Years' Mean	<b>655</b>	<b>289</b>	<b>180</b>	<b>158</b>	<b>213</b>	<b>37</b>	<b>4.0</b>	<b>188.6</b>

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 36

River **Wardha (Pranhita)**

Site **Ballarshah**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1955-56* . . .	N.A.	N.A.	135,659	101,921	61,542	14,015	N.A.
1956-57 . . .	27,703	64,128	58,796	39,650	12,298	10,566	564.2
57-58 . . .	6,209	19,131	86,104	36,128	5,949	2,273	413.3
58-59 . . .	1,747	57,800	71,625	88,481	10,375	3,802	618.1
59-60 . . .	7,092	89,061	73,899	190,178	27,621	5,260	1,035.3
60-61† . . .	1,871	4,925	4,058	3,297	2,293	394	44.5
5 Years' Mean	8,924	47,009	58,896	71,547	11,707	4,459	535.1

SERIAL No. 37

River **Walganga (Pranhita)**

Site **Lakhanwara**

Year	Mean discharge (Cusecs)						Volume (June to Oct.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1959-60 . . .	48	166	493	524	176		3.7
60-61 . . .	30	281	503	(254)	134		3.3
2 Years' Mean	39	224	498	389	155		3.5

\* Not considered for calculating the average.

† During 1960-61 current meter observations were not taken when the gauges were above 20.00 feet.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 36

River **Wardha (Pranhita)**

Site **Ballarshah**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1955-56* . . .	8,216	1,331	825	415	293	236	30.2	N. A.
1956-57 . . .	2,484	1,572	625	1,179	1,284	383	19.9	584.1
57-58 . . .	989	633	442	306	194	137	7.1	420.4
58-59 . . .	2,490	1,150	689	339	219	106	13.3	631.4
59-60 . . .	2,624	2,277	1,071	1,314	417	140	20.8	1,056.1
60-61 . . .	1,144	563	537	(785)	195	62	8.7	53.2
<b>5 Years' Mean</b>	<b>1,946</b>	<b>1,239</b>	<b>673</b>	<b>785</b>	<b>462</b>	<b>166</b>	<b>14.0</b>	<b>549.0</b>

SERIAL No. 37

River **Wainganga (Pranhita)**

Site **Lakhanwara**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1959-60 . . .								
60-61 . . .								
<b>2 Years' Mean</b>								

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 38

River. **Wainganga (Pranhita)**

Site **Dhuti**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep. -	Oct.	Nov.	
1941-42 . . .	Nil	1,213	9,524	802	305	5	<b>31.6</b>
42-43 . . .	684	30,903	16,793	10,710	756	29	<b>159.5</b>
43-44 . . .	15	15,404	9,573	11,731	2,328	370	<b>104.5</b>
44-45 . . .	Nil	20,312	25,604	5,826	1,649	292	<b>143.3</b>
45-46 . . .	11,995	28,507	12,228	41,721	937	352	<b>174.1</b>
1946-47 . . .		7,389	19,667	3,343	887		
47-48 . . .							
48-49 . . .		6,329	18,508	9,760	851	1,265	
49-50 . . .		3,361	17,963	19,716	8,420	770	
50-51 . . .		15,886	15,296	7,479	972	Nil	
1951-52 . . .							
52-53 . . .		2,967	9,980	4,133	517		
53-54 . . .							
54-55 . . .							
55-56 . . .							
1956-57 . . .							
57-58 . . .		6,350	16,498	6,214	562	244	
58-59 . . .	102	38,055	12,834	9,649	7,011	Nil	<b>180.4</b>
59-60 . . .	813	5,108	9,316	17,455		Nil	
60-61 . . .	1,365	12,687	18,962	3,445	6,598	347	<b>115.8</b>

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 38

River **Wainganga (Pranhita)**

Site **Dhuti**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1941-42 . . .								
42-43 . . .								
43-44 . . .								
44-45 . . .								
45-46 . . .								
1946-47 . . .								
47-48 . . .								
48-49 . . .								
49-50 . . .								
50-51 . . .								
1951-52 . . .								
52-53 . . .								
53-54 . . .								
54-55 . . .								
55-56 . . .								
1956-57 . . .								
57-58 . . .								
58-59 . . .		99	59	59		27		
59-60 . . .		Nil	Nil			4		
60-61 . . .	170	122	73	28	Nil	37	1.2	117.0



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# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 39

River Wainganga (Pranhita)

Site Warsa

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1957-58 . . .	2,864	35,613	97,878	24,817	4,014	1,660	444.4
58-59 . . .	554	30,623	55,294	58,261	32,081	4,964	481.3
59-60 . . .	2,756	66,078	100,397	135,713	29,418	6,899	901.5
60-61 . . .	4,842	78,385	103,266	29,530	27,947	2,947	658.1
4 Years' Mean	2,754	52,675	89,209	62,080	23,365	4,118	621.3

SERIAL No. 40

River Pench (Wainganga)

Site Shingodi

Year	Mean discharge (Cusecs)						Volume (June to Oct.) T.M. C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1959-60 . . .	714	1,156	2,388	5,786	1,031		29.2
60-61 . . .	318	1,791	3,185	670	512	145	17.2
2 Years' Mean	516	1,474	2,786	3,228	772		23.2

SERIAL No. 41

River Pench (Wainganga)

Site Totledoh

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1958-59 . . .				4,888			
59-60 . . .							
60-61 . . .	1,133	6,712	10,689	1,969	2,063	594	61.6

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 39

River **Wainganga (Pranhita)**

Site **Warsa**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1957-58 . . . . .	705	479	390	325	187	115	5.8	450.2
58-59 . . . . .	1,865	1,241	941	355	261	168	12.7	494.0
59-60 . . . . .	2,286	3,553	1,204	809	504	272	22.8	924.3
60-61 . . . . .	1,505	940	809	519	372	236	11.5	669.6
4 Years' Mean	1,590	1,553	836	502	331	198	13.2	634.5

SERIAL No. 40

River **Pench (Wainganga)**

Site **Shingodi**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May.	(Dec. to May) T.M.C.	Annual T.M.C.
1959-60 . . . . .								
60-61 . . . . .								
2 Years' Mean								

SERIAL No. 41

River **Pench (Wainganga)**

Site **Totledoh**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1958-59 . . . . .								
59-60 . . . . .								
60-61 . . . . .	416	98						

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 42

River **Indravati**

Site **Pathagudem**

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1957-58 . . .					9,851	3,736	
58-59 . . .	686	52,272	97,186	90,515	56,064	13,222	821.2
59-60 . . .	1,580	65,110	216,498	211,095	38,792	8,684	1431.9
60-61 . . .							

SERIAL No. 43

River **Sabari**

Site **Pulusura**  
(Upper Kolab H.E. Scheme)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1921-22 . . .	(437)	2,593	2,945	3,928	1,384	611	31.4
22-23 . . .	739	7,370	3,661	4,137	1,574	952	48.8
23-24 . . .	230	860	1,825	1,539	877	941	16.5
24-25 . . .	400	480	2,362	2,414	1,582	1,053	21.8
25-26 . . .	1,348	4,853	4,877	4,206	1,661	546	46.3
1926-27 . . .	231	1,290	4,793	3,610	1,542	510	31.7
27-28 . . .	3,493	4,161	5,104	2,425	1,857	717	47.1
28-29 . . .	662	5,055	2,203	5,432	3,327	1,009	46.7
8 Years' Mean	942	3,333	3,471	3,461	1,726	792	36.3

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 42

River **Indravati**

Site **Pathagudem**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1957-58 . . .	2,168	1,461	1,000	629	567	749	17.3	
58-59 . . .	6,080	2,579	1,699	843	556	547	32.5	853.7
59-60 . . .	3,439							
60-61 . . .								

SERIAL No. 43

River **Sabari**

Site **Pulusura**  
(Upper Kolab H.E. Scheme)

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec to May) T.M.C.	Annual T.M.C.
1921-22 . . .	416	342	239	162	121	192	3.8	35.2
22-23 . . .	586	433	377	293	(119)	194	5.3	54.1
23-24 . . .	359	277	197	128	233	245	3.8	20.3
24-25 . . .	410	303	220	177	219	547	5.0	26.8
25-26 . . .	410	535	349	317	288	429	5.9	52.2
1926-27 . . .	359	281	209	168	142	181	3.6	35.3
27-28 . . .	425	312	235	164	254	121	3.9	51.0
28-29 . . .	556	320	332	244	(196)	(273)	5.1	51.8
8 Years' Mean	440	350	270	207	196	273	4.6	40.8

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 44

River Sileru (Sabari)

Site Jalaput Dam  
(Machkund H.E. Scheme)

Year	Mean discharge (Cusecs)						Volume (June to Nov.) T.M.C.
	June	July	Aug.	Sep.	Oct.	Nov.	
1942-43 . . .	(922)	5,662	6,732	4,143	1,549	1,215	53.5
43-44 . . .	240	2,316	2,981	3,632	1,435	771	30.0
44-45 . . .	323	8,246	7,416	2,453	2,851	1,108	59.7
45-46 . . .	406	3,951	4,588	11,673	6,455	1,815	76.3
1946-47 . . .	2,000	5,103	12,315	3,782	1,561	1,194	69.0
47-48 . . .	563	5,309	5,503	5,763	3,640	1,184	58.1
48-49 . . .	682	2,167	3,224	3,753	4,235	1,490	41.1
49-50 . . .	518	2,029	5,455	5,147	7,030	3,194	61.7
50-51 . . .	330	6,891	5,225	2,428	1,048	1,003	45.1
1951-52 . . .	893	6,377	14,686	3,885	2,813	1,387	79.9
52-53 . . .	241	5,058	8,542	6,615	5,657	1,061	72.1
53-54 . . .	4,134	2,943	22,449	7,629	7,659	1,235	122.2
54-55 . . .	740	20,588	23,762	39,220	20,258	2,808	283.9
55-56 . . .							
1956-57 . . .							
57-58 . . .							
58-59 . . .							
59-60* . . .					1,999	1,099	
60-61* . . .	999	3,933	417	721	881	1,004	21.1
13 Years' Mean	922	5,895	9,452	7,702	5,092	1,497	81.0

\*Not considered for calculating the average.

# MEAN DISCHARGE BY MONTHS AND VOLUME OF ANNUAL FLOW

SERIAL No. 44

River **Sileru (Sabari)**

Site **Jalaput Dam  
(Machkund H. E. Scheme)**

Year	Mean discharge (Cusecs)						Volume	
	Dec.	Jan.	Feb.	Mar.	Apr.	May	(Dec. to May) T.M.C.	Annual T.M.C.
1942-43 . . .	660	498	306	181	252	340	5.9	59.4
43-44 . . .	397	375	208	314	239	280	4.7	34.7
44-45 . . .	559	352	263	186	276	152	4.6	64.3
45-46 . . .	897	572	412	297	918	415	9.2	85.5
1946-47 . . .	577	442	301	227	210	206	5.1	74.1
47-48 . . .	1,394	694	454	296	586	486	10.3	68.4
48-49 . . .	697	519	350	224	314	380	6.5	47.6
49-50 . . .	818	527	401	290	216	274	6.7	68.4
50-51 . . .	395	367	258	203	248	517	5.2	50.3
1951-52 . . .	700	499	313	255	443	322	6.7	86.6
52-53 . . .	722	445	308	196	239	172	5.4	77.5
53-54 . . .	649	474	301	265	396	9,788	31.6	153.8
54-55 . . .	(705)	(480)	(323)	(244)	(361)	(1,111)	8.6	292.5
55-56 . . .								
1956-57 . . .								
57-58 . . .								
58-59 . . .								
59-60* . . .	725	887	961	1,119	1,013	954	14.9	
60-61* . . .	805	730	886	1,260	1,380	1,287	16.7	37.8
13 Years' Mean	705	480	323	244	361	1,111	8.5	89.5

\*Not considered for calculating the average.